Diploma
Examinations
Program

Provincial Report

January 1989 Administration

Student Evaluation
and Records

Alberta
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SECTION 1:
PURPOSE OF THE PROVINCIAL REPORT

Following each major administration of the diploma examinations, a *Provincial Report* of the results is prepared. This *Provincial Report*, which is a public document, is to be used by superintendents, principals, and teachers together with the parallel school and jurisdiction reports, which are confidential to each jurisdiction. Refer to Section 3, page 5, of this report for additional information about the jurisdiction, school, and instructional group reports.

This *Provincial Report* provides information about the results achieved by students who wrote the January 1989 Grade 12 diploma examinations. The results reported in sections 5 to 11 are for all students for whom both a school-awarded mark and a diploma examination mark are available. This group comprises virtually all students who completed a January 1989 examination, including students in public and private schools, students with mature status, and correspondence students who completed their course work. Results obtained by students with mature status and no school-awarded mark, and by students without mature status and no school-awarded mark, are reported separately in Section 12.

The January 1989 diploma examination writing schedule was unique in that, due to inclement weather, two examinations, designated Form A and Form B, were administered at separate sittings for Mathematics 30 and Biology 30. Sections 8 and 9 provide information about the results achieved by the students who wrote these examinations.

This *Provincial Report* supplements other Student Evaluation and Records Branch documents: namely, the *Diploma Examinations Program Bulletins*, which are distributed in September and describe the exam- inations in each subject; the school and school jurisdiction reports; the examination specifications for each subject; and the examinations themselves. In order to make informed judgments about the meanings of various results, reviewers should use this *Provincial Report* and the school and jurisdiction data in conjunction with the examinations and the subject information bulletins describing each examination.

Educators in each jurisdiction are encouraged to study the examination results carefully as an aid in determining the strengths and weaknesses of their programs and resources.

It is strongly recommended that educators involved in interpreting results read "Section 3: Guidelines for Interpreting the Results of the Diploma Examinations" in this document before interpreting the specific reports for their own jurisdiction, school, or instructional group.

Readers of this report are invited to complete the questionnaire at the end of this booklet and to send it to the address indicated.

SECTION 2:
THE GRADE 12 DIPLOMA EXAMINATIONS PROGRAM

INTRODUCTION

The Diploma Examinations Program, which is an integral part of the high school diploma requirements, certifies the level of students' academic achievement in selected Grade 12 courses.

All Grade 12 students registered in Alberta are now required to write at least ONE diploma examination in either English 30 or English 33 in order to receive a high school diploma. Provisions also exist for students with mature status to receive credits for a Grade 12 course by writing the appropriate diploma examination without having taken instruction in the course.

The Diploma Examinations Program consists of course-specific examinations that are based on the prescribed *Program of Studies for Senior High Schools* for the following Grade 12 courses:

- English 30
- English 33
- Social Studies 30
- Mathematics 30
- Biology 30
- Chemistry 30
- Physics 30

Diploma examinations in Social Studies 30, Mathematics 30, Biology 30, Chemistry 30, and Physics 30 are available in French translation upon request.

The diploma examinations are administered three times per year -- in January, June, and August.

Detailed information about the Grade 12 Diploma Examinations Program is available in the *General Information Bulletin*: *Grade 12 Diploma Examinations Program*, in the "Information for Students" brochure, and in the examination information bulletins published annually for each subject.

REQUIREMENTS FOR HIGH SCHOOL DIPLOMAS

Alberta Education issues three distinct high school diplomas.

The General High School Diploma and the Advanced High School Diploma certify that the recipients have met the requirements outlined in the *Junior-Senior High School Handbook*. The requirements for both of these diplomas are indicated below.

General High School Diploma

To earn a General High School Diploma, students must obtain course credit in either English 30 or English 33 and obtain 100 credits distributed over courses as specified in the *Junior-Senior High School Handbook*.

Some students who are working toward the General High School Diploma may wish to obtain credits in other diploma examination courses (i.e., Social Studies 30, Mathematics 30, Biology 30, Chemistry 30, Physics 30). To obtain credits in these courses, students must also write the appropriate diploma examination regardless of the type of diploma they wish to receive.

Advanced High School Diploma

The Advanced High School Diploma certifies achievement in an academic program.

To earn an Advanced High School Diploma, students must satisfy the current course and credit requirements for a General High School Diploma and obtain course credits in English 30, Social Studies 30, Mathematics 30, and ONE of Biology 30, Chemistry 30, or Physics 30.

Students who meet the requirements for an Advanced High School Diploma and obtain a final average of 80% or higher on the four required diploma examination courses, with not less than 65% in any one of these four required courses, receive an Award of Excellence. This Award of Excellence is noted on the students' Advanced High School Diploma.

When students write two or three of the diploma examinations in Biology 30, Chemistry 30, and Physics 30, the highest final blended mark attained is used for diploma purposes and for calculating the average for the Award of Excellence.

The High School Equivalency Diploma is an alternative means of certification for those individuals who have left high school. The requirements that must be met in order to earn a High School Equivalency Diploma are specified in the *Junior-Senior High School Handbook*.

AWARDING OF COURSE CREDITS

To obtain credit in any high school course, students must earn a final mark of 50% or better. To obtain credit in a Grade 12 diploma examination course, students must write the appropriate diploma examination and attain a final blended mark of 50% or better. The final blended mark is made up of 50% of the mark awarded by the school and 50% of the diploma examination mark.

For example, a Physics 30 student might receive a mark of 45% from the school and achieve a mark of 57% on the diploma examination. This student would earn credit for Physics 30 because the final blended mark would be 51%, the average of the school and examination marks.

For students with mature status who do not have a school mark or who have a school mark lower than the examination mark, the examination mark is deemed to be the final mark.

SECTION 3: GUIDELINES FOR INTERPRETING THE RESULTS OF THE DIPLOMA EXAMINATIONS

JURISDICTION, SCHOOL, AND INSTRUCTIONAL GROUP REPORTS

In addition to this *Provincial Report*, superintendents and principals receive a confidential report of results achieved by the students in their particular jurisdictions or schools. Superintendents may also request similar reports for instructional groups within the school jurisdiction. Usually, instructional group reports are requested by class; however, instructional group reports may be requested for other groupings of students.

Jurisdiction, school, and instructional group reports contain tables that parallel major tables in this *Provincial Report*. Tables are organized by examination subject. The following statistics are included:

- letter grade distributions for school-awarded, diploma examination, and final blended marks;
- averages for school-awarded, diploma examination, and final blended marks;
- averages for multiple-choice questions, written-response questions, and reporting categories used in this *Provincial Report*;
- the percentage of students selecting each alternative on each multiple-choice question; and
- individual student results for examination marks: total test, multiple choice, written response, and major reporting categories.

All reported statistics are based on results attained by those students for whom both an examination mark and a school-awarded mark are available. Results obtained by students with mature status and no school-awarded mark, and by students without mature status and no school-awarded mark, are reported separately in Section 12 only. Original school-awarded marks and examination marks are used; any changes resulting from appeals do not appear. In the event that differences exist between marks given in the reports and marks on results statements and transcripts, the marks on results statements and transcripts are considered the official marks.

USE OF THE REPORTS

The jurisdiction, school, and instructional group reports may be used to help

- evaluate educational programs in each subject
- improve the quality of educational programs
- identify strengths and weaknesses of the individual student, school, and jurisdiction by comparing their results with provincial results

The reports are NOT intended to be used as the basis for

- evaluating teacher performance
- comparing performance between or among schools

Administrators in each jurisdiction should apply separate locally developed teacher, school, and school system evaluation policies to the task of evaluating teacher performance and school performance.

The information provided in the reports is factual regarding *what* has happened. The interpretation of this information -- hypothesizing *why* results are as they are -- involves many complex considerations of the factors and variables that contribute to achievement.

FACTORS LIMITING THE INTERPRETATION OF EXAMINATION RESULTS

Educators who are interpreting results must take into account the following limitations:

1. School-awarded marks and diploma examination marks are complementary measures. The purpose of the examination is to provide a common measure of achievement for students throughout the province. School-awarded marks should reflect ALL important aspects of learning in a course, including those that cannot be measured by time-limited paper and pencil tests. Therefore, differences are to be expected between a student's school-awarded mark and that student's diploma examination mark in a subject. Any comparisons of the two marks should be restricted to group statistics for groups of reasonable size and should be made with full knowledge of the differences between the two measures.

2. The differences between provincial results and local results are affected by jurisdiction, school, and group size, as well as by other factors.

3. Blended mark distributions *cannot* be directly compared to school-awarded mark distributions or diploma examination mark distributions.

4. Factors affecting student selection of examination courses vary from school to school. These factors must be considered when comparing school or jurisdiction marks to provincial marks:

   - Some schools may have a limited selection of courses. Students with weak academic records who, in other schools, would have selected nonexamination courses will find it necessary to take diploma examination courses for credits.
   - Some schools may have a policy of encouraging students to challenge any diploma examination course, which results in a higher than usual proportion of students taking those courses.
   - Some schools may have a policy of discouraging students with weak academic records from enrolling in particular diploma examination courses, which results in a lower than usual proportion of students taking those courses.

FACTORS THAT MAY AFFECT STUDENT ACHIEVEMENT

There are many factors or variables that may contribute to student achievement. Some of these factors are:

1. Environment
   - community environment
   - school environment
   - socioeconomic background
   - family circumstances

2. Student Factors
   - ability
   - attitude
   - motivation
   - aspiration
   - academic background
   - learning style

3. Resources (availability and appropriateness)
   - programs of study
   - curriculum guides
   - resource materials
   - library services
   - current textbooks
   - references

4. Instruction
   - qualifications of teachers
   - teacher experience
   - professional development
   - teacher morale
   - teaching strategies
   - hours of instruction
   - staff turnover
   - amount of homework assigned
   - communication of teacher expectations

A SYSTEMATIC APPROACH FOR THE EFFECTIVE USE OF EXAMINATION RESULTS

Examination results can be used constructively as one means of improving the quality of education. A systematic use of examination results would include the following steps:

1. Comparing test results for a school or instructional group to the provincial results. Be sure that your comparisons include the
   - total test score,
   - total multiple-choice and written-response scores,
   - subscale scores for multiple-choice and written-response questions (this current administration as well as results over time), and
   - individual multiple-choice and written-response question results.

2. Noting any patterns, anomalies, and/or interrelationships in the results.

3. Hypothesizing relationships between your observations and any of the factors above that may have had an effect on achievement.

4. Considering and implementing a plan that will help improve the quality of education for students.

AN ADMINISTRATIVE MODEL FOR THE EFFECTIVE USE OF EXAMINATION RESULTS

The following is *one* model that may be useful for those who wish to develop a constructive system for interpreting diploma examination results. This model is based on work done by Medicine Hat School District #76.

Basic Principles

1. It is desirable and feasible for teachers and school administrators to make use of diploma examination results in analysing the performance of their own students.

2. It is more constructive for schools to develop their own analyses, interpretations, and action plans than to have these imposed externally.

3. Factors such as those listed on page 7 should be analysed and discussed when reviewing examination results.

4. Subtest or reporting category results are usually more informative than total test scores.

5. Generalizations should be based on results from several diploma examination administrations.

6. It is neither desirable nor productive to compare the results of different schools.

7. Diploma examinations measure many of the objectives specified by the curriculum. *However, skills and concepts that are not measured by the diploma examinations are also to be taught and evaluated.*

8. Staff discussions as well as written reports are useful means of ensuring that results are appropriately interpreted and used.

Suggested Content for Interpretation of Individual School Results

1. Subject and date of examination administration

2. Number of students who wrote the examination

3. Profile of students or groups who wrote the examination:

   - patterns of course selection
   - previous performance
   - prerequisites
   - number of students repeating the course, etc.

4. Program emphases; e.g., hours of instruction, skill and content emphases

5. Instructional practices; e.g., methodology, resources, and the relationship between the program offered and the provincial curriculum

6. Program objectives not measured by the diploma examination

7. School results compared to provincial results on subtests

8. Current school results compared to those of previous administrations

9. Discussion of actual and expected subtest results, with recommended action

10. Discussion of question results, identification of common student errors, and suggestions of ways to reduce the misunderstanding that leads to these errors

11. Recommendations for the following year or semester

12. Summary and concluding comments

Suggested Reporting Structure

1. Teachers, department heads, and/or principals analyse and prepare a written report about each administration of a diploma examination.

2. Principals review and sign the report.

3. The report is shared with central office supervisory personnel.

4. The appropriate central office supervisory personnel prepare a written response to the report and send copies of the response to the teacher, department head, and principal.

5. If possible, all involved staff meet to discuss the report and the response.

6. Reports are used to improve the program and to maximize future opportunities for student success.

7. When large differences exist between expected and actual examination results, consideration should be given to conducting a formal program evaluation.

8. The report for the January and June administrations could include comparisons with achievement data from Grade 10 and Grade 11 courses.

SECTION 4: SUMMARY OF RESULTS

In Table 1, the provincial distribution of student marks in the diploma examination courses is summarized. The percentage distribution for the school-awarded mark, the January 1989 diploma examination mark, and the final blended mark achieved by students is shown for each of the A, B, C, and F grade categories. In addition, a comparison with the January 1988 diploma examination course results is provided.

Table 1
Distribution of Student Marks in Diploma Examination Courses
January 1989 Examination Administration and January 1988 Final Course Mark*

Diploma Examination Course	January 1989 School-Awarded Mark	January 1989 Diploma Examination Mark	January 1989 Final Blended Mark	January 1988 Final Blended Mark
English 30			N = 9 114	N = 9 189
A (80-100%)	13.1	9.3	9.6	8.1
B (65-79%)	41.3	35.2	40.2	38.4
C (50-64%)	37.9	44.9	45.9	47.8
F (0-49%)	7.7	10.6	4.4	5.8
Mean	65.4	63.5	64.9	64.0
Standard Deviation**	11.8	11.7	10.6	10.7
English 33			N = 3 955	N = 4 078
A (80-100%)	3.6	6.9	2.8	2.9
B (65-79%)	35.4	39.1	39.0	35.4
C (50-64%)	50.1	39.5	51.0	54.9
F (0-49%)	10.9	14.5	7.1	6.8
Mean	61.1	62.6	62.3	61.8
Standard Deviation	10.4	12.2	9.7	9.5

(Continued)

*The figures may change slightly as a result of appeals of school-awarded marks, rereads of diploma examinations, or special cases considerations.
**Standard deviation is an indication of the amount of variation in a distribution. Normally, about 34% of the population will be distributed one "standard deviation" above the mean and about 34% of the population will be distributed one "standard deviation" below the mean. To take the English 30 Diploma Examination as an example, 68% of the students who wrote the examination scored between 51.8% and 75.2%.

Table 1 (continued)

Diploma Examination Course	January 1989 School-Awarded Mark	January 1989 Diploma Examination Mark	January 1989 Final Blended Mark	January 1988 Final Blended Mark
Social Studies 30			N = 8 347	N = 8 561
A (80-100%)	16.4	11.9	13.1	13.1
B (65-79%)	37.7	34.9	36.9	37.3
C (50-64%)	38.8	34.8	41.2	40.9
F (0-49%)	7.0	18.4	8.8	8.6
Mean	66.0	62.8	64.7	64.8
Standard Deviation	12.3	13.9	12.4	12.4
Mathematics 30			N = 8 884*	N = 9 079
A (80-100%)	25.5	27.7	25.7	24.1
B (65-79%)	32.7	26.7	30.5	30.9
C (50-64%)	32.6	24.0	32.4	33.8
F (0-49%)	9.2	21.6	11.3	11.3
Mean	67.9	65.8	67.3	66.9
Standard Deviation	14.7	18.5	15.9	15.6
Biology 30			N = 7 830**	N = 7 891
A (80-100%)	19.0	21.4	20.1	20.4
B (65-79%)	36.3	25.6	30.4	32.9
C (50-64%)	37.6	29.2	37.7	36.6
F (0-49%)	7.1	23.9	11.8	10.1
Mean	66.7	63.2	65.4	66.1
Standard Deviation	12.7	17.7	14.6	14.1

(Continued)

*Mathematics 30 Form A and Form B were judged to be equivalent in difficulty. Results presented in Table 1 are based on scores achieved by 7 930 students who wrote Form A and 954 students who wrote Form B.

**Biology 30 Form A and Form B were judged to be equivalent in difficulty. Results presented in Table 1 are based on scores achieved by 7 006 students who wrote Form A and 824 students who wrote Form B.

Table 1 (continued)

Diploma Examination Course	January 1989 School-Awarded Mark	January 1989 Diploma Examination Mark	January 1989 Final Blended Mark	January 1988 Final Blended Mark
Chemistry 30			N = 6 986	N = 6 731
A (80-100%)	21.5	19.2	19.0	16.9
B (65-79%)	36.1	28.5	34.8	33.9
C (50-64%)	33.9	32.3	36.1	38.0
F (0-49%)	8.5	20.1	10.1	11.2
Mean	67.4	63.7	66.0	65.1
Standard Deviation	13.3	16.2	14.0	13.9
Physics 30			N = 2 888	N = 3 180
A (80-100%)	25.2	24.8	24.1	24.7
B (65-79%)	40.2	29.6	35.0	35.8
C (50-64%)	28.2	26.0	31.5	31.3
F (0-49%)	6.4	19.6	9.5	8.2
Mean	69.3	65.2	67.7	68.1
Standard Deviation	13.1	17.3	14.4	14.1

SECTION 5:
ENGLISH 30 DIPLOMA EXAMINATION RESULTS

The English 30 Diploma Examination consists of two parts: Part A: Written Response and Part B: Reading (Multiple Choice), each worth 50% of the total examination mark.

The information contained in all tables of this section is based on results achieved by 9 114 students.

ENGLISH 30: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 2 shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 2
English 30
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	95.6
Outstanding Level	80	9.6

*An explanation of standards is given in the appendix.

ENGLISH 30: AVERAGES AND DISTRIBUTION OF MARKS

Table 3, on page 16, shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in English 30.

Table 3
English 30
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	13.1	9.3	9.6
B (65-79)	41.3	35.2	40.2
C (50-64)	37.9	44.9	45.9
F (0-49)	7.7	10.6	4.4
Average (%)	65.4	63.5	64.9
Standard Deviation*	11.8	11.7	10.6

*See footnote defining standard deviation on page 11.

Table 4 shows raw score averages and standard deviations for the written-response (Part A) and multiple-choice (Part B) sections of the English 30 Diploma Examination.

Table 4
English 30
Written-Response and Multiple-Choice Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Part A: Written Response*	50	50	31.3	6.4
Part B: Multiple Choice	79	50	50.7	10.9

*Readers of this report should note that the internal weighting of reporting categories for Part A: Written Response changed in January 1988. Educators interpreting local results should take the changes in reporting category weighting into consideration if they are considering results prior to January 1988.

Reviewers of results must also keep in mind that the assignments in 1989 are NOT parallel to those in 1988 (see Table 5). Refer to the *Grade 12 Diploma Examinations Bulletin: English 30 & English 33: 1988-89 School Year* (September 1988) for a discussion of examination modifications.

ENGLISH 30: RESULTS OF PART A: WRITTEN RESPONSE

Table 5 outlines the nature of the assignments, the reporting categories, and the proportion of the total mark assigned to each category for Part A: Written Response.

Table 5
English 30
Part A: Written Response
Diploma Examination Blueprint

Description of the Writing Assignment	Reporting Category	Proportion of Total Mark (%)
Minor Assignment		
The student is required to offer a personal response to the reading selection provided on the examination.	1. Thought and Detail	7.5
	2. Writing Skills	7.5
Major Assignment		
The major assignment maintains a thematic connection to the minor assignment. The student is required to demonstrate an appreciation of literary works studied through a discussion of theme and the literary techniques that support that theme. The student is also required to synthesize thoughts clearly and correctly in writing.	1. Total Impression	5
	2. Thought and Detail	12.5
	3. Organization	7.5
	4. Matters of Choice	5
	5. Matters of Convention	5
		50.0

Results for Part A: Written Response are most clearly understood in the context of the assignments and the scoring descriptors. Complete scoring guides are available in the *Grade 12 Diploma Examinations Bulletin: English 30 & English 33: 1988-89 School Year* (September 1988).

All schools should have extra copies of Part A: Written Response for use in conjunction with information provided in tables 6 and 7.

The results outlined in tables 6 and 7 are best considered in terms of the percentage of students judged by markers to have presented work that was "Satisfactory" or above in any reporting category. A score of "Satisfactory" represents the minimum acceptable standard in any reporting category.

Please note that students do better on some dimensions of the task than on others. It is possible to draw conclusions about local program strengths and weaknesses by comparing local percentages of "Satisfactory" or above scores in each reporting category with the provincial averages.

Table 6 shows the percentage distribution of scores (scale points) for the minor assignment of Part A: Written Response.

Table 6
English 30
Part A: Written Response
Minor Assignment: Personal Response to Literature
Percentage Distribution of Scores

Score (Scale Points)	Reporting Category	
	Thought and Detail	Writing Skills
5 (Excellent)	3.9	4.1
4 (Proficient)	29.9	32.5
3 (Satisfactory)	54.8	53.9
2 (Limited)	10.0	8.3
1 (Poor)	1.1	0.9
INS (Insufficient or No Response)	0.2	0.2

In responding to the minor assignment, 88.6% of the students scored "Satisfactory" or above for Thought and Detail and 90.5% scored "Satisfactory" or above for Writing Skills.

Table 7 shows the percentage distribution of scores (scale points) for the major assignment of Part A: Written Response.

Table 7
English 30
Part A: Written Response
Major Assignment: Literature Composition
Percentage Distribution of Scores

Score (Scale Points)	Reporting Category				
	Total Impression	Thought and Detail	Organization	Matters of Choice	Matters of Convention
5 (Excellent)	2.6	2.8	3.0	3.8	5.4
4 (Proficient)	18.9	18.7	21.9	23.6	31.1
3 (Satisfactory)	53.5	47.2	57.7	58.0	50.0
2 (Limited)	23.4	28.7	16.2	13.4	12.0
1 (Poor)	1.3	2.3	0.9	1.0	1.2
INS (Insufficient or No Response)	0.3	0.3	0.3	0.3	0.3

In responding to the major assignment, 75.0% of the students scored "Satisfactory" or above for Total Impression, 68.7% for Thought and Detail, 82.6% for Organization, 85.4% for Matters of Choice, and 86.5% for Matters of Convention. A score of 3 (Satisfactory) represents the minimum acceptable standard in any reporting category.

ENGLISH 30: RESULTS OF PART B: READING (MULTIPLE CHOICE)

Table 8 shows the blueprint used to develop Part B: Reading (Multiple Choice).

Part B normally has a value of 80 marks (one mark for each multiple-choice question) and contributes 50% to the total examination mark in English 30.

It is important to note that one multiple-choice question was deleted from Part B: Reading (Multiple Choice) after a review of question statistics. Consequently, for January 1989, the total mark value of Part B was 79 marks.

Each question from Part B: Reading (Multiple Choice) is classified in two ways, according to the thinking skills demanded by the question and according to the curricular area being tested.

Table 8
English 30
Part B: Reading (Multiple Choice)
Diploma Examination Blueprint

Reporting Category	Question Types by Cognitive Skills			Examination Emphasis (%)
	Literal Understanding	Inference and Application	Evaluation	
Meanings	32,33,50	1,12,13,18, 20,21,24,25, 27,29*,31,37, 39,40,42,46, 47,57,62,64, 72,76,78	19,36,51, 52,54,61, 68	22
Critical Response	28,35	2,6,9,10,16, 26,30,34,38, 49,53,55,56, 58,59,63,65, 66,70	11,17,43, 44,45,48, 60,67	17
Human Experience and Values	4	3,5,8,14,15, 22,23,73,74, 75,80	7,41,69, 71,77,79	11
Examination Emphasis (%)	4	33	13	50

*Question 29 was deleted from the examination.

Table 9 shows the raw score results for each of the multiple-choice reporting categories. The averages are quoted as raw scores rather than as percentages.

It is not appropriate to compare results achieved in one reporting category with those achieved in other reporting categories because the questions selected for each area of content are not selected to be equal in the level of difficulty. It is appropriate, however, to compare local results with provincial averages within each reporting category.

Table 9
English 30
Part B: Reading (Multiple Choice)
Raw Score Results

Reporting Category	Average	Standard Deviation
1. Meanings (32 questions)	19.6	4.9
2. Critical Response (29 questions)	19.7	4.3
3. Human Experience and Values (18 questions)	11.4	3.0

Table 10, on page 22, shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question.

The results shown in Table 10 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' responses to questions can help to indicate strengths and weaknesses in local educational programs.

Exam developers select questions for Part B: Reading (Multiple Choice) that fit the requirements of the blueprint with respect to question type and curriculum emphasis. They select questions that cover the full range of difficulty but strive to maintain a balance among difficult, easy, and middle-difficulty questions.

Each question is carefully reviewed for statistical and curricular validity when the preliminary results are available. Questions that have unforeseen statistical problems are deleted before students' scores are calculated.

There is a detailed discussion of questions 27, 29, 32, and 45 on page 23. This discussion makes sense only with reference to the Readings and Questions booklets that comprise Part B: Reading (Multiple Choice).

Table 10
English 30
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	A	82.5	4.6	7.0	5.8	41	D	14.3	13.8	3.7	68.3
2	C	2.8	10.4	76.7	10.1	42	B	30.4	55.5	2.0	12.1
3	B	42.9	48.5	5.0	3.6	43	D	6.1	6.3	7.5	80.0
4	B	19.1	64.6	3.1	13.2	44	A	69.5	18.5	5.3	6.6
5	A	68.2	6.1	14.7	10.9	45**	B	30.2	19.4	40.7	9.6
6	B	4.1	48.7	26.8	20.4	46	D	13.9	7.3	11.8	66.9
7	D	10.8	8.2	9.7	71.2	47	D	6.6	12.8	7.7	72.9
8	D	10.0	11.3	21.0	57.7	48	B	4.6	82.3	2.1	11.0
9	C	27.4	4.4	63.9	4.2	49	C	13.3	6.2	71.2	9.3
10	B	13.1	66.0	14.5	6.4	50	A	58.0	14.7	15.6	11.7
11	D	7.3	7.1	6.3	79.2	51	D	10.3	11.1	7.4	71.2
12	D	16.3	15.1	23.7	44.8	52	C	16.4	13.3	39.9	30.3
13	A	81.6	5.1	10.6	2.6	53	D	1.5	7.7	17.4	73.3
14	C	7.3	10.6	70.1	11.9	54	D	7.9	1.0	25.9	65.2
15	D	14.8	19.0	3.1	63.1	55	B	16.7	61.1	2.3	19.8
16	D	3.7	20.1	26.3	49.9	56	B	4.1	89.4	2.4	4.1
17	D	10.5	3.9	5.8	79.8	57	C	16.9	14.4	44.5	24.0
18	A	55.5	8.0	13.0	23.3	58	B	12.0	67.4	10.4	10.1
19	A	57.2	25.3	10.7	6.7	59	A	84.4	2.5	4.5	8.5
20	C	2.7	2.3	89.0	6.0	60	C	3.0	8.6	85.8	2.5
21	B	11.6	56.8	9.3	22.3	61	B	17.9	67.7	8.7	5.6
22	C	40.4	7.4	50.2	2.0	62	D	5.3	2.9	0.6	91.2
23	B	5.2	85.0	3.6	6.2	63	C	3.9	18.1	72.1	5.9
24	A	54.6	22.9	9.7	12.8	64	A	68.2	5.8	14.6	11.4
25	B	7.8	57.6	8.4	26.2	65	B	4.0	70.9	17.1	7.9
26	B	21.4	54.5	9.9	14.2	66	C	2.4	9.2	81.1	7.3
27**	C	36.8	20.7	30.2	12.2	67	A	59.4	7.0	4.4	29.1
28	C	3.4	8.7	77.2	10.6	68	A	63.6	10.4	1.5	24.4
29**	QUESTION DELETED					69	C	27.9	3.1	55.6	13.1
30	A	76.2	7.8	3.3	12.8	70	D	12.5	14.6	12.1	60.6
31	A	65.1	4.1	28.1	2.6	71	A	65.1	13.5	15.0	6.2
32**	A	19.4	6.0	61.1	13.5	72	C	10.6	9.6	62.9	16.8
33	C	5.8	60.1	32.4	1.6	73	D	16.0	10.0	18.1	55.6
34	D	52.1	6.6	7.9	33.4	74	C	20.8	31.5	35.1	12.5
35	C	17.5	19.0	55.3	8.2	75	B	7.2	75.8	10.6	6.2
36	D	1.5	20.6	48.4	29.4	76	A	81.3	8.2	4.5	5.8
37	A	63.0	21.6	12.6	2.8	77	C	10.7	24.8	60.1	4.2
38	D	9.7	4.4	10.1	75.8	78	B	4.2	85.5	7.3	2.8
39	C	5.1	12.9	78.9	3.1	79	A	81.2	4.2	12.0	2.4
40	B	6.2	67.9	10.7	15.3	80	C	5.9	15.8	62.9	15.2

*The sum of the percentages for each question may be less than 100% because the No Response category is not included. This category is not greater than 0.3% for any question.
**Discussion of these questions follows on page 23.

Question 27 was retained despite its high level of difficulty (only 30.2% of students answered correctly). Students should have first considered the *effectiveness* of More's speeches (lines 35-39, 46-52, 58-62, 93-100) and then determined *why* his speeches are effective. Students who selected "satire" (alternative A) may have done so without checking their answer against the text.

Following a review of preliminary results, Question 29 was deleted because there appeared to be more than one possible answer. The question was designed to measure students' interpretation of idiomatic expressions or metaphor in context. The statistics indicate that many students guessed in responding to this question.

Question 32 proved to be extremely difficult. However, it was not deleted for the following reasons. This question was designed to evaluate students' grasp of literal meaning (curriculum concepts 10, 13). Students' understanding of "treacherous crowns" ("crown" meaning king or ruler) was central to their grasp of the events described in this prologue. The previous question led directly to a clarification of Question 32. Students may have neglected to observe the relationship between punctuation and meaning (curriculum concept 15).

Question 45 also proved to be an extremely difficult question. It was not deleted because careful reading should have eliminated incorrect responses. Question 45 required understanding of vocabulary ("pretension") and recognition of the speaker's pretension as a *teacher*, qualified by the speaker's *awareness* of that pretension (curriculum concepts 8, 9, 10, 12).

SECTION 6:
ENGLISH 33 DIPLOMA EXAMINATION RESULTS

The English 33 Diploma Examination consists of two parts: Part A: Written Response and Part B: Reading (Multiple Choice), each worth 50% of the total examination mark.

The information contained in all tables of this section is based on results achieved by 3 955 students.

ENGLISH 33: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 11 shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 11
English 33
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	92.9
Outstanding Level	80	2.8

*An explanation of standards is given in the appendix.

ENGLISH 33: AVERAGES AND DISTRIBUTION OF MARKS

Table 12, on page 26, shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in English 33.

Table 12
English 33
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	3.6	6.9	2.8
B (65-79)	35.4	39.1	39.0
C (50-64)	50.1	39.5	51.0
F (0-49)	10.9	14.5	7.1
Average (%)	61.1	62.6	62.3
Standard Deviation*	10.4	12.2	9.7

*See footnote defining standard deviation on page 11.

Table 13 shows raw score averages and standard deviations for the written-response (Part A) and multiple-choice (Part B) sections of the English 33 Diploma Examination.

Table 13
English 33
Written-Response and Multiple-Choice Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Part A: Written Response*	50	50	30.4	5.9
Part B: Multiple Choice	67	50	42.9	10.8

*Readers of this report should note that the internal weighting of reporting categories for Part A: Written Response changed in January 1988. Educators interpreting local results should take the changes in reporting category weighting into consideration if they are considering results prior to January 1988.

Reviewers of results must also keep in mind that the assignments in 1989 are NOT parallel to those in 1988 (see Table 14). Refer to the *Grade 12 Diploma Examinations Bulletin: English 30 & English 33: 1988-89 School Year* (September 1988) for a discussion of examination modifications.

ENGLISH 33: RESULTS OF PART A: WRITTEN RESPONSE

Table 14 outlines the nature of the assignments, the reporting categories, and the proportion of the total mark assigned to each category for Part A: Written Response.

Table 14
English 33
Part A: Written Response
Diploma Examination Blueprint

Description of the Writing Assignment	Reporting Category	Proportion of Total Mark (%)
Personal Response to Literature The student is required to discuss an aspect of literature from a personal perspective.	1. Thought and Detail	10
	2. Organization	5
	3. Matters of Choice	5
	4. Matters of Convention	5
Functional Writing The assignment is functional in nature. The student is required to write within a given situation or context.	1. Thought and Detail	10
	2. Organization	2.5
	3. Writing Skills	2.5
Response to Visual Communication The writing assignment is connected to one or more photographs and/or cartoons. The student is required to write about main ideas and techniques of visual communication.	1. Thought and Detail	5
	2. Organization	2.5
	3. Writing Skills	2.5
		50.0

Results for Part A: Written Response are most clearly understood in the context of the assignments and the scoring descriptors. Complete scoring guides are available in the *Grade 12 Diploma Examinations Bulletin: English 30 & English 33: 1988-89 School Year* (September 1988).

All schools should have extra copies of Part A: Written Response for use in conjunction with information provided in tables 15, 16, and 17.

The results outlined in tables 15, 16, and 17 are best considered in terms of the percentage of students judged by markers to have presented work that was "Adequate" or above in any reporting category. A score of "Adequate" represents the minimum acceptable standard in any reporting category.

Please note that students do better on some dimensions of the task than on others. It is possible to draw conclusions about local program strengths and weaknesses by comparing local percentages of "Adequate" or above scores in each reporting category with the provincial averages.

Table 15 shows the percentage distribution of scores (scale points) for Section I of Part A: Written Response.

Table 15
English 33
Part A: Written Response
Section I: Personal Response to Literature
Percentage Distribution of Scores

Score (Scale Points)	Reporting Category			
	Thought and Detail	Organization	Matters of Choice	Matters of Convention
5 (Proficient)	1.8	1.9	2.7	4.4
4 (Capable)	21.9	22.4	24.1	34.4
3 (Adequate)	40.9	59.5	60.9	47.5
2 (Limited)	29.0	14.7	10.9	11.9
1 (Poor)	6.2	1.3	1.3	1.6
INS (Insufficient or No Response)	0.2	0.2	0.2	0.2

In responding to the assignment in Section I, 64.6% of the students scored "Adequate" or above for Thought and Detail, 83.8% for Organization, 87.7% for Matters of Choice, and 86.3% for Matters of Convention.

Table 16 shows the percentage distribution of scores (scale points) for Section II of Part A: Written Response.

Table 16
English 33
Part A: Written Response
Section II: Functional Writing
Percentage Distribution of Scores

Score (Scale Points)	Reporting Category		
	Thought and Detail	Organization	Writing Skills
5 (Proficient)	1.8	2.4	3.2
4 (Capable)	25.8	25.8	28.7
3 (Adequate)	53.2	57.6	53.4
2 (Limited)	16.6	12.9	12.9
1 (Poor)	2.2	0.8	1.5
INS (Insufficient or No Response)	0.4	0.4	0.4

In responding to the assignment in Section II, 80.8% of the students scored "Adequate" or above for Thought and Detail, 85.8% for Organization, and 85.3% for Writing Skills. A score of 3 (Adequate) represents the minimum acceptable standard in any reporting category.

Table 17, on page 30, shows the percentage distribution of scores (scale points) for Section III of Part A: Written Response.

Table 17
English 33
Part A: Written Response
Section III: Response to Visual Communication
Percentage Distribution of Scores

Score (Scale Points)	Reporting Category		
	Thought and Detail	Organization	Writing Skills
5 (Proficient)	1.1	1.2	2.0
4 (Capable)	12.4	14.1	23.1
3 (Adequate)	51.3	62.1	56.4
2 (Limited)	31.9	20.4	15.5
1 (Poor)	2.4	1.2	2.0
INS (Insufficient or No Response)	1.0	1.0	1.0

In responding to the assignment in Section III, 64.8% of the students scored "Adequate" or above for Thought and Detail, 77.4% for Organization, and 81.5% for Writing Skills. A score of (3) Adequate represents the minimum acceptable standard in any reporting category.

ENGLISH 33: RESULTS OF PART B: READING (MULTIPLE CHOICE)

Table 18, on page 31, shows the blueprint used to develop Part B: Reading (Multiple Choice).

Part B normally has a value of 70 marks (one mark for each multiple-choice question) and contributes 50% to the total examination mark in English 33.

It is important to note that three multiple-choice questions were deleted from Part B: Reading (Multiple Choice) after a review of question statistics. Consequently, for January 1989, the total mark value of Part B was 67 marks.

Each question from Part B: Reading (Multiple Choice) is classified in two ways, according to the thinking skills demanded by the question and according to the curricular area being tested.

Table 18
English 33
Part B: Reading (Multiple Choice)
Diploma Examination Blueprint

Reporting Category	Question Types by Cognitive Skills			Examination Emphasis (%)
	Literal Understanding	Inference and Application	Evaluation	
Meanings	*10,11,14*	*1,17,18,20,26, 44,45,46,47,51, 54,55,59,62,65, 66,67,68,69*	*6,13,16, 21,49*	19
Relationships: Form and Content		*2,7,9,24,25, 29,48,50,60, 61,64*,70*		9
Human Experience and Values		*3,4,5,12,15, 19,22*,23,27, 52,53,57*	*8,28,30, 56,58,63*	13
Life Skills	*31,32,33, 34,35,36*	*38,39,40,41, 43*	*37,42**	9
Examination Emphasis (%)	6.5	34.5	9	50

*Questions 22, 42, and 64 were deleted from the examination.

Table 19 shows the raw score results for each of the multiple-choice reporting categories. The averages are quoted as raw scores rather than as percentages.

It is not appropriate to compare results achieved in one reporting category with those achieved in other reporting categories because the questions selected for each area of content are not selected to be equal in the level of difficulty. It is appropriate, however, to compare local results with provincial averages within each reporting category.

Table 19
English 33
Part B: Reading (Multiple Choice)
Raw Score Results

Reporting Category	Average	Standard Deviation
1. Meanings (27 questions)	16.8	4.8
2. Relationships: Form and Content (11 questions)	6.4	2.3
3. Human Experience and Values (17 questions)	11.3	3.2
4. Life Skills (12 questions)	8.4	2.4

Table 20, on page 33, shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question.

The results shown in Table 20 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' responses to questions can help to indicate strengths and weaknesses in local educational programs.

Exam developers select questions for Part B: Reading (Multiple Choice) that fit the requirements of the blueprint with respect to question type and curriculum emphasis. They select questions that cover the full range of difficulty but strive to maintain a balance among difficult, easy, and middle-difficulty questions.

Each question is carefully reviewed for statistical and curricular validity when the preliminary results are available. Questions that have unforeseen statistical problems are deleted before students' scores are calculated.

There is a discussion of questions 22, 42, and 64 on page 34. This discussion makes sense only with reference to the Readings and Questions booklets that comprise Part B: Reading (Multiple Choice).

Table 20
English 33
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	D	4.6	2.2	13.1	80.0	36	C	3.9	5.0	83.8	7.2
2	B	17.6	69.1	10.4	2.9	37	C	7.3	27.8	55.4	9.4
3	A	68.6	6.1	13.2	12.2	38	D	24.6	22.3	4.9	48.0
4	C	1.8	5.0	89.6	3.6	39	B	13.5	71.4	10.2	4.9
5	D	13.6	8.9	6.7	70.8	40	C	8.3	10.6	77.8	3.2
6	D	5.6	10.0	21.9	62.6	41	B	7.1	74.3	13.7	4.9
7	C	16.4	25.7	48.2	9.7	42**	QUESTION DELETED				
8	D	9.9	16.4	6.7	67.0	43	C	16.1	10.7	55.6	17.5
9	C	3.8	2.4	71.6	22.3	44	D	11.9	8.5	25.3	54.2
10	A	54.0	41.7	2.8	1.5	45	A	88.2	3.3	2.4	6.1
11	A	80.5	9.3	2.0	8.2	46	C	5.8	7.8	79.2	7.2
12	B	11.8	78.8	2.7	6.7	47	D	9.6	15.9	6.3	68.0
13	A	74.7	9.5	8.8	6.9	48	D	4.4	42.9	8.1	44.5
14	B	10.5	64.7	12.8	11.9	49	D	2.3	5.2	24.8	67.6
15	B	15.7	35.6	21.8	26.9	50	A	60.6	23.4	11.7	4.2
16	D	6.6	24.7	13.5	55.3	51	A	55.6	10.7	26.2	7.3
17	C	1.3	22.1	73.8	2.8	52	B	5.2	75.9	11.2	7.6
18	A	57.5	7.6	29.1	5.8	53	A	74.8	5.6	6.9	12.6
19	B	15.7	49.3	20.3	14.7	54	C	20.0	5.3	58.0	16.5
20	B	6.0	58.5	22.2	13.2	55	D	16.6	32.0	14.3	36.9
21	A	62.8	11.3	20.3	5.6	56	B	22.3	49.6	7.4	20.3
22**	QUESTION DELETED					57	A	73.4	5.8	14.7	5.9
23	B	20.3	54.4	14.2	11.1	58	C	6.6	18.6	63.4	11.0
24	D	11.0	5.1	5.9	78.1	59	D	12.8	12.2	19.2	55.5
25	B	8.4	66.1	8.9	16.5	60	A	54.2	15.5	18.8	11.0
26	C	34.0	7.4	49.3	9.3	61	A	52.1	21.6	13.7	12.0
27	C	4.3	8.4	81.2	6.0	62	A	62.0	8.8	16.1	12.6
28	B	3.2	65.2	21.3	10.3	63	D	12.2	25.8	8.4	53.1
29	D	6.7	8.0	23.5	61.6	64**	QUESTION DELETED				
30	B	3.7	80.3	5.4	10.5	65	B	11.2	53.8	10.4	24.1
31	A	83.2	5.0	9.2	2.5	66	B	14.8	68.4	10.6	5.4
32	D	10.8	9.0	6.6	73.4	67	C	7.8	10.0	72.2	9.1
33	C	3.8	5.1	84.6	6.5	68	D	26.8	8.6	6.9	56.9
34	A	71.3	10.7	6.6	11.3	69	D	17.1	22.3	22.5	37.3
35	A	68.2	4.1	7.7	19.9	70	C	27.7	20.9	42.4	8.0

*The sum of the percentages for each question may be less than 100% because the No Response category is not included. This category is not greater than 0.9% for any question.
**Discussion of these questions follows on page 34.

Question 22 was deleted because the statistical review indicated that the question was clearly too difficult for English 33 students.

A detailed review of Question 42 revealed a problem in the question design; consequently, the question was deleted.

Question 64 proved to be very difficult for students, and a review indicated a possible flaw in the question; consequently, it was deleted.

SECTION 7: SOCIAL STUDIES 30 DIPLOMA EXAMINATION RESULTS

The Social Studies 30 Diploma Examination consists of two parts: a multiple-choice section worth 70% of the total examination mark and a written-response section worth 30% of the total examination mark.

The information contained in all tables of this section is based on results achieved by 8 347 students.

SOCIAL STUDIES 30: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 21 shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 21
Social Studies 30
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	91.2
Outstanding Level	80	13.1

*An explanation of standards is given in the appendix.

SOCIAL STUDIES 30: AVERAGES AND DISTRIBUTION OF MARKS

Table 22, on page 36, shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in Social Studies 30.

SOCIAL STUDIES 30: RESULTS OF PART A: MULTIPLE CHOICE

Table 24 shows the blueprint used to develop Part A: Multiple Choice.

Part A normally has a value of 70 marks (one mark for each multiple-choice question) and contributes 70% to the total examination mark in Social Studies 30.

It is important to note that one multiple-choice question was deleted from Part A after a review of question statistics. Consequently, for January 1989, the total mark value of Part A was 69 marks.

Each question from Part A is classified in two ways, according to the thinking (process) skills demanded by the question and according to the curricular area being tested.

Table 24
Social Studies 30
Part A: Multiple Choice
Diploma Examination Blueprint

Reporting Category	Questions by Process Category*					Examination Emphasis (%)
	Recall and Comp.	Inquiry Skills A	Inquiry Skills B	Inquiry Skills C	Valuing Skills	
Value Concepts						
competing values, value positions - Topic A - Topic B	*2,27, 44,69*				*1,7, 51,52*	8
Political and Economic Systems facts, concepts, generalizations	*3,4,5,11, 14,16,17, 18,19,20, 25,31,32, 33,34,35*	*6,12, 26*	*8,13,15, 21,22,23, 24,28,29*	*9,10, 30*		31
Co-operation and Conflict Among States facts, concepts, generalizations	*36,37**, 38,39,40, 45,50,58, 59,60,61, 62,64,65, 67,68*	*47,54, 57*	*41,42,43, 46,48,49, 53,55,56*	*63,66, 70*		31
Examination Emphasis (%)	36	6	18	6	4	70

*Inquiry Skills A -- identify and focus on the issue, and formulate research questions. Inquiry Skills B -- gather, organize, analyse, evaluate, and synthesize data. Inquiry Skills C -- resolve the issue, apply the decision, and evaluate the decision, process, and action.
**Question 37 was deleted from the examination.

Table 22
Social Studies 30
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	16.4	11.9	13.1
B (65-79)	37.7	34.9	36.9
C (50-64)	38.8	34.8	41.2
F (0-49)	7.0	18.4	8.8
Average (%)	66.0	62.8	64.7
Standard Deviation*	12.3	13.9	12.4

*See footnote defining standard deviation on page 11.

Table 23 shows raw score averages and standard deviations for the written-response and multiple-choice sections of the Social Studies 30 Diploma Examination.

Table 23
Social Studies 30
Written-Response and Multiple-Choice Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Written Response	30	30	16.2	4.5
Multiple Choice	69	70	45.7	10.9

Table 25 shows the raw score results for each of the multiple-choice reporting categories. The averages are quoted as raw scores rather than as percentages.

It is not appropriate to compare results achieved in one reporting category with those achieved in other reporting categories because the questions selected for each area of content are not selected to be equal in the level of difficulty. It is appropriate, however, to compare local results with provincial averages within each reporting category.

Table 25
Social Studies 30
Part A: Multiple Choice
Raw Score Results

Reporting Category	Average	Standard Deviation
1. Recall and Comprehension (31 questions)	21.3	5.2
2. Inquiry Skills: Identify Issue (6 questions)	4.1	1.4
3. Inquiry Skills: Gather and Use Data (18 questions)	11.3	3.3
4. Inquiry Skills: Resolve and Decide (6 questions)	3.7	1.5
5. Valuing (8 questions)*	5.3	1.6
Political and Economic Systems (35 questions)	22.4	6.0
Co-operation and Conflict (34 questions)	23.3	5.6

*Of the eight Valuing (Reporting Category 5) questions, four are categorized as Recall and Comprehension (Reporting Category 1) and four are categorized as Valuing Skills.

Table 26, on page 39, shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question.

The results shown in Table 26 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Exam developers select questions for Part A that fit the requirements of the blueprint with respect to question type and curriculum emphasis. They select questions that cover the full range of difficulty but strive to maintain a balance among difficult, easy, and middle-difficulty questions.

Each question is carefully reviewed for statistical and curricular validity when the preliminary results are available. Questions that have unforseen statistical problems are deleted before students' scores are calculated.

Table 26
Social Studies 30
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	B	6.8	83.6	4.9	4.5	36	B	9.5	81.5	5.1	3.8
2	C	7.5	10.3	78.9	3.4	37**	QUESTION DELETED				
3	C	12.0	12.9	70.1	5.0	38	D	6.2	5.8	3.3	84.7
4	D	12.9	17.6	15.1	54.3	39	B	6.2	52.6	18.5	22.7
5	D	23.8	2.6	8.5	65.0	40	A	56.4	8.3	14.7	20.6
6	C	8.2	2.4	82.2	7.1	41	C	8.2	13.3	76.0	2.5
7	A	57.8	16.6	12.2	13.3	42	B	5.2	80.4	10.0	4.4
8	A	58.2	5.9	7.2	28.6	43	C	5.2	17.4	54.9	22.4
9	D	4.7	5.9	7.3	82.1	44	D	16.4	16.4	15.5	51.7
10	A	59.3	19.6	6.9	14.2	45	A	75.1	10.3	9.7	4.9
11	D	15.1	19.4	2.1	63.4	46	C	15.7	9.7	70.0	4.5
12	B	8.7	72.2	14.6	4.4	47	B	19.2	49.1	15.1	16.5
13	D	12.4	8.3	14.5	64.7	48	A	59.0	19.3	5.3	16.3
14	A	59.0	17.4	18.4	5.3	49	B	24.7	45.3	9.0	21.0
15	C	3.9	19.4	69.3	7.4	50	C	9.1	9.2	73.4	8.3
16	A	63.6	6.1	5.7	24.6	51	A	75.8	4.1	3.7	16.4
17	B	14.9	57.6	5.4	22.1	52	C	1.0	31.4	58.0	9.6
18	A	64.1	17.2	10.0	8.6	53	D	15.5	3.5	4.3	76.7
19	B	3.5	63.5	17.2	15.7	54	C	7.9	13.2	74.3	4.5
20	C	12.4	10.5	43.9	33.2	55	A	71.7	7.6	19.0	1.6
21	C	17.1	6.8	71.9	4.1	56	A	75.2	13.8	5.5	5.5
22	B	32.2	39.6	7.4	20.8	57	A	62.5	25.2	8.1	4.1
23	D	7.1	17.0	29.2	46.7	58	B	9.8	67.4	8.7	13.9
24	C	35.6	8.4	45.8	10.1	59	D	8.6	23.8	9.7	57.6
25	D	3.7	2.7	6.0	87.6	60	B	10.1	78.4	5.2	6.2
26	A	68.6	21.2	3.9	6.1	61	D	7.4	6.4	10.5	75.7
27	C	22.2	7.7	60.1	9.8	62	C	11.0	13.3	71.7	3.8
28	B	23.3	67.2	6.2	3.4	63	A	75.5	7.5	15.3	1.7
29	B	15.1	52.8	21.2	10.8	64	B	4.3	81.0	7.1	7.6
30	C	6.8	10.8	46.8	35.6	65	D	6.4	16.3	7.0	70.2
31	A	70.8	14.0	9.1	6.0	66	A	59.4	18.8	11.5	10.2
32	B	8.4	75.3	7.8	8.5	67	D	8.9	5.3	2.5	83.3
33	B	17.6	52.8	6.8	22.7	68	B	7.5	84.7	5.5	2.1
34	C	12.0	6.1	56.7	25.1	69	D	5.9	3.8	23.9	66.3
35	D	5.0	8.5	1.8	84.7	70	A	48.6	12.6	15.1	23.6

*The sum of the percentages for each question may be less than 100% because the No Response category is not included. This category is not greater than 0.3% for any question.
**Discussion of this question follows.

Question 27 was deleted because the statistical review indicated that somewhat unclear wording may have led a few ordinarily high achieving students to an incorrect answer.

SOCIAL STUDIES 30: RESULTS OF PART B: WRITTEN RESPONSE

Table 27 outlines the nature of the assignment, the reporting categories, and the proportion of the total mark assigned to each category for Part B: Written Response.

Table 27
Social Studies 30
Part B: Written Response
Diploma Examination Blueprint

Description of the Writing Assignment	Reporting Category	Proportion of Total Mark (%)
The student is required to write one complete and unified essay in which the student integrates steps of the inquiry process by defending a position on a given issue.	1. Defence of Position	10
	2. Discussion of Value Positions	5
	3. Presentation of Examples or Case Studies	10
	4. Quality of Language and Expression	5
		30

Results for Part B: Written Response are most clearly understood in the context of the assignment and the scoring descriptors. Complete scoring guides are available in the *Grade 12 Diploma Examinations Bulletin: Social Studies 30: 1988-89 School Year* (September 1988).

All schools should have extra copies of the Social Studies 30 Diploma Examination (January 1989) for use in conjunction with information provided in Table 28.

The results outlined in Table 28 are best considered in terms of the percentage of students judged by markers to have presented work that was "Satisfactory" or above in any reporting category. A score of "Satisfactory" represents the minimum acceptable standard in any reporting category.

Please note that students do better on some dimensions of the task than on others. It is possible to draw conclusions about local program strengths and weaknesses by comparing local percentages of "Satisfactory" or above scores in each reporting category with the provincial averages.

Table 28, on page 41, shows the percentage distribution of scores (scale points) for Part B: Written Response.

Table 28
Social Studies 30
Part B: Written Response
Percentage Distribution of Scores

Score (Scale Points)	Reporting Category			
	Defence of Position	Discussion of Value Positions	Presentation of Examples or Case Studies	Quality of Language and Expression
5 (Exceptional)	1.4	1.6	1.9	2.3
4 (Proficient)	12.6	11.5	13.8	19.0
3 (Satisfactory)	43.4	36.6	41.9	61.8
2 (Limited)	37.8	33.5	34.3	16.0
1 (Poor)	4.4	16.2	7.5	0.6
0 (Insufficient or No Response)	0.2	0.7	0.6	0.2

In responding to the writing assignment, 57.6% of the students scored "Satisfactory" or above for Defence of Position, 49.7% for Discussion of Value Positions, 57.6% for Presentation of Examples or Case Studies, and 83.1% for Quality of Language and Expression. A score of 3 (Satisfactory) represents the minimum acceptable standard in any reporting category.

SECTION 8: MATHEMATICS 30 DIPLOMA EXAMINATION RESULTS

The Mathematics 30 Diploma Examination consists of three parts: Part A contains machine-scored multiple-choice questions worth 69% of the total examination mark, Part B contains machine-scored open-ended questions worth 11% of the total examination mark, and Part C contains written-response questions worth 20% of the total examination mark.

The January 1989 Mathematics 30 Diploma Examination writing schedule presented a unique situation: two forms, designated Form A and Form B, were administered on separate days, Form A on January 30, 1989, and Form B on February 8, 1989. The development, administration, and marking of both forms followed parallel procedures. The same personnel were involved in each phase for both forms. Particular credit must be given to the chief marker and her committee of head markers for guiding the marking teams through the challenging task of marking both examinations with equal reliability.

The Mathematics 30 examinations have traditionally been constructed using field test data. Every attempt is made to construct parallel examinations with equivalent overall difficulty.

Based on field test statistics, school-awarded marks, diploma examination marks, and judgments made by 24 experienced Mathematics 30 teachers, it was concluded that the Mathematics 30 Form A and Form B diploma examinations were equivalent.

An analysis was carried out to determine whether or not students who wrote Form A and students who wrote Form B were representative of the Mathematics 30 student population. Results revealed that both groups of students were representative of the Mathematics 30 student population.

The information contained in tables 29 to 31 of this section is based on results achieved by 8 884 students: 7 930 who wrote Form A and 954 who wrote Form B.

MATHEMATICS 30: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 29, on page 44, shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 29
Mathematics 30
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	88.7
Outstanding Level	80	25.7

*An explanation of standards is given in the appendix.

MATHEMATICS 30: AVERAGES AND DISTRIBUTION OF MARKS

Table 30 shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in Mathematics 30.

Table 30
Mathematics 30
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	25.5	27.7	25.7
B (65-79)	32.7	26.7	30.5
C (50-64)	32.6	24.0	32.4
F (0-49)	9.2	21.6	11.3
Average (%)	67.9	65.8	67.3
Standard Deviation* (%)	14.7	18.5	15.9

*See footnote defining standard deviation on page 11.

The parameters shown in Table 30 should be compared with statistics in similar tables in the jurisdiction, school, and instructional group reports as an aid in interpreting strengths and weaknesses in local educational programs. It should be noted that approximately 68% of the students earned examination marks between 47% and 84%; that is, one standard deviation below and above the average of 65.8%.

Table 31 shows raw score averages and standard deviations for the written-response and the machine-scored sections of the Mathematics 30 Diploma Examination. Averages given in Table 31 are based on raw scores, which are the number of marks obtained on each section of the examination.

The total marks possible are identified for the written-response and the machine-scored sections.

Differences between the total Mathematics 30 Diploma Examination average reported in Table 30 and the examination section averages reported in Table 31 are due to rounding.

Table 31
Mathematics 30
Written-Response and Machine-Scored* Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Written Response	13	20	7.7	3.9
Machine Scored	52	80	35.0	9.0

*Machine-scored sections comprise Part A (machine-scored multiple-choice questions) and Part B (machine-scored open-ended questions).

MATHEMATICS 30 FORM A: SUBSCALE AND INDIVIDUAL QUESTION RESULTS

Table 32, on page 46, shows the blueprint used to develop the Mathematics 30 Form A Diploma Examination. Question numbers in square brackets are from the written-response section of the examination. Question numbers in round brackets are from the machine-scored open-ended section of the examination. Question numbers that are *not* enclosed in brackets are from the machine-scored multiple-choice section of the examination.

Examination emphases for each reporting category and cognitive level are included in the table. Classification by reporting category and cognitive level for each question is indicated.

Table 32
Mathematics 30 Form A
Diploma Examination Blueprint

Reporting Category	Questions By Cognitive Level				Examination Emphasis (%)
	Knowledge	Comprehension	Application	Higher Mental Activities	
Trigonometry	*1*	*2,3,4,5,6, 9*	*8,10 (OE1) [WR2]*	*7*	25
Quadratic Relations	*12*	*11,13,14, 17,19 (OE2)*	*15,18 [WR3]*	*16*	21
Sequences, Series, Limits	*22*	*20,24,25, 27 (OE3)*	*21,23,26, 28,29*	*(OE4)*	18
Statistics	*33*	*30*	*31 (OE5) [WR1]*	*32*	14
Logarithms	*36*	*34,38*	*35,39 (OE6)*	*37*	11
Polynomial Functions	*41*	*42,45 (OE7)*	*40,44*	*43*	11
Examination Emphasis (%)	9	36	46	9	100

NOTE: Numbers in square brackets [ ] are the written-response questions.
Numbers in round brackets ( ) are the machine-scored open-ended questions.
Numbers without brackets are the machine-scored multiple-choice questions.

The information contained in tables 33 to 38 of this section is based on results achieved by 7 930 students who wrote Form A of the Mathematics 30 Diploma Examination.

Table 33 below, and Table 34, on page 48, show the total marks possible and the provincial averages in raw scores for the reporting categories and cognitive levels of written-response and machine-scored sections, as well as the total Mathematics 30 Form A Diploma Examination.

It is important to stress that the averages on the various reporting categories *cannot* be directly compared with one another. Rather, the results shown in tables 33 and 34 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Table 33
Mathematics 30 Form A
Raw Score Averages for Reporting Categories

Reporting Category	Total Marks Possible			Raw Score Averages		
	Written Response	Machine Scored	Total	Written Response	Machine Scored	Total
Trigonometry	5	11	16	2.8	8.0	10.9*
Quadratic Relations	4	10	14	2.1	6.7	8.8
Sequences, Series, Limits	0	12	12	0.0	8.2	8.2
Statistics	4	5	9	2.9	3.2	6.1
Logarithms	0	7	7	0.0	4.4	4.4
Polynomial Functions	0	7	7	0.0	4.5	4.5

*Small discrepancies between parts and totals are due to rounding.

Table 34
Mathematics 30 Form A
Raw Score Averages for Cognitive Levels

Cognitive Level	Total Marks Possible			Raw Score Averages		
	Written Response	Machine Scored	Total	Written Response	Machine Scored	Total
Knowledge	0	6	6	0.0	4.2	4.2
Comprehension	0	23	23	0.0	17.1	17.1
Application	13	17	30	7.8	11.0	18.8
Higher Mental Activities	0	6	6	0.0	2.7	2.7

Table 35, on page 49, shows the percentage of students who chose each alternative (A, B, C, and D) for each machine-scored multiple-choice question on the Mathematics 30 Form A Diploma Examination. The correct response (key) for each question is also identified.

The results shown in Table 35 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Machine-scored multiple-choice questions varied from those that students found to be difficult, such as Question 43 with only 36.8% of the students answering correctly, to those that were easy for students, such as Question 36 with 89.7% of the students answering correctly. An example of a question of average difficulty is Question 10 with 65.8% of the students answering correctly.

Table 35
Mathematics 30 Form A
Results for Machine-Scored Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	C	4.7	6.0	76.9	12.4	24	B	6.8	82.2	7.3	3.7
2	B	7.2	76.9	5.6	9.9	25	C	10.2	7.9	66.3	15.4
3	C	6.5	13.5	68.3	11.0	26	C	3.8	14.8	73.4	7.9
4	D	4.6	4.5	12.0	78.7	27	B	4.7	62.8	17.6	14.8
5	A	67.5	9.1	13.5	9.9	28	C	5.7	19.5	45.7	29.0
6	C	1.8	15.3	79.8	3.0	29	B	8.2	69.9	10.6	11.0
7	B	10.9	62.3	15.4	11.0	30	D	8.3	8.2	7.8	75.6
8	B	7.3	70.2	13.2	8.9	31	A	80.4	12.8	4.7	1.9
9	C	8.3	6.6	75.9	9.0	32	B	20.2	55.3	15.2	8.9
10	A	65.8	17.9	7.3	8.5	33	A	63.3	4.6	16.8	15.1
11	D	2.8	4.2	15.4	77.6	34	B	2.5	87.5	6.3	3.6
12	C	18.9	5.2	71.0	4.8	35	C	9.9	9.9	71.9	8.1
13	A	81.8	2.7	14.0	1.5	36	D	2.1	4.4	3.6	89.7
14	D	3.6	9.8	22.2	64.2	37	A	36.5	31.1	23.0	8.7
15	A	67.7	9.3	7.3	15.6	38	A	76.4	9.1	8.2	6.1
16	B	21.4	40.5	24.1	13.0	39	D	10.4	8.6	33.1	47.9
17	B	9.8	82.2	4.2	3.7	40	C	10.2	16.3	69.1	3.9
18	D	11.6	16.9	13.5	57.9	41	C	5.8	20.2	59.1	14.6
19	C	5.2	9.8	68.5	16.3	42	D	2.2	7.1	2.7	87.9
20	B	4.3	88.5	6.5	0.7	43	A	36.8	27.2	27.5	8.0
21	A	80.4	7.3	7.2	5.0	44	D	6.6	9.0	17.9	65.8
22	D	25.1	13.0	4.3	57.5	45	B	8.7	70.4	14.8	5.9
23	A	75.9	9.5	7.0	7.5						

*The sum of the percentages for some questions is less than 100% because the No Response category is not included. This category does not exceed 1.0% for any question.

Table 36, on page 50, shows the results for individual machine-scored open-ended questions. The correct answer (key) for each question and the distribution of students who correctly answered the question, who gave incorrect answers, and who did not respond to the question are provided in the table.

Table 36
Mathematics 30 Form A
Results for Machine-Scored Open-Ended Questions

Question	Key	Distribution of Students (%)		
		Answered Correctly	Answered Incorrectly	No Response
1	011.9	79.3	18.6	2.1
2	007.5	53.6	37.7	8.7
3	240.0	77.9	16.7	5.3
4	008.9	38.6	49.9	11.5
5	000.7	40.9	53.6	5.5
6	009.0	32.0	48.8	19.2
7	011.0	57.5	35.5	7.0

On Question 1, for example, 79.3% of the students gave the correct answer of 011.9, 18.6% gave an incorrect answer, and 2.1% did not respond to the question at all.

Table 37 shows the distribution of marks for each written-response question in the Mathematics 30 Form A Diploma Examination.

Table 37
Mathematics 30 Form A
Distribution of Marks for Written-Response Questions

Question	Percentage of Students Obtaining Each Mark						
	NR*	0	1	2	3	4	5
1	5.3	12.0	5.8	7.0	9.8	60.2	
2	9.3	12.3	11.3	7.3	13.6	17.5	28.8
3	8.2	14.1	23.0	14.7	4.5	35.5	

*No Response

On Question 1, for example, 5.3% of the students did not respond to the question, 12.0% were awarded no marks for their response, 5.8% received one mark out of four, and 60.2% received full marks for their response.

Table 38 shows the provincial raw score average and the difficulty level for each written-response question in the Mathematics 30 Form A Diploma Examination. It must be noted that these averages *cannot* be directly compared since the questions were designed to be different in difficulty.

Table 38
Mathematics 30 Form A
Average Marks for Written-Response Questions

Question	Total Marks	Average	Difficulty Level*
1	4	2.9	0.72
2	5	2.8	0.56
3	4	2.1	0.52

*The difficulty level is the average divided by the total marks possible.

In answering the first written-response question, many students attempted to estimate the areas using the percentage 34%, 14%, and 2%. They did not seem to realize the necessity of using z-scores and the z-score tables supplied with the examination. In the second written-response question, a number of students did not clearly show what procedures they used to simplify the left side of the identity (factoring, multiplying numerator and denominator by the lowest common denominator, etc.). A common point missed in the third written-response question was that the co-ordinates of the point (3, 3) on the ellipse would have to satisfy the equation of that ellipse.

MATHEMATICS 30 FORM B: SUBSCALE AND INDIVIDUAL QUESTION RESULTS

Table 39, on page 52, shows the blueprint used to develop the Mathematics 30 Form B Diploma Examination. Question numbers in square brackets are from the written-response section of the examination. Question numbers in round brackets are from the machine-scored open-ended section of the examination. Question numbers that are *not* enclosed in brackets are from the machine-scored multiple-choice section of the examination.

Examination emphases for each reporting category and cognitive level are included in the table. Classification by reporting category and cognitive level for each question is indicated.

Table 39
Mathematics 30 Form B
Diploma Examination Blueprint

Reporting Category	Questions By Cognitive Level				Examination Emphasis (%)
	Knowledge	Comprehension	Application	Higher Mental Activities	
Trigonometry	*8*	*1,2,3,5,7, 10*	*4,9,11 (OE1) [WR1]*	*6*	25
Quadratic Relations	*17*	*13,15,16, 18,22*	*12,19,20, 21,23 (OE2),(OE3)*	*14*	21
Sequences, Series, Limits	*25*	*24,27,29 (OE4)*	*28 [WR2]*	*26*	18
Statistics	*32*	*30,31,37*	*34,35,36 (OE5)*	*33*	14
Logarithms	*41*	*38,40 (OE6)*	*42,43*	*39*	11
Polynomial Functions	*(OE7)*	*45*	*[WR3]*	*44*	11
Examination Emphasis (%)	9	34	48	9	100

NOTE: Numbers in square brackets [ ] are the written-response questions.
Numbers in round brackets ( ) are the machine-scored open-ended questions.
Numbers without brackets are the machine-scored multiple-choice questions.

The information contained in tables 40 to 45 of this section is based on results achieved by 954 students who wrote Form B of the Mathematics 30 Diploma Examination.

Table 40, below, and Table 41, on page 54, show the total marks possible and the provincial averages in raw scores for the reporting categories and cognitive levels of written-response and machine-scored sections, as well as the total Mathematics 30 Form B Diploma Examination.

It is important to stress that the averages on the various reporting categories *cannot* be directly compared to one another. Rather, the results shown in tables 40 and 41 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Table 40
Mathematics 30 Form B
Raw Score Averages for Reporting Categories

Reporting Category	Total Marks Possible			Raw Score Averages		
	Written Response	Machine Scored	Total	Written Response	Machine Scored	Total
Trigonometry	4	12	16	3.3	8.2	11.5*
Quadratic Relations	0	14	14	0.0	8.2	8.2
Sequences, Series, Limits	5	7	12	2.8	5.4	8.2
Statistics	0	9	9	0.0	6.6	6.6
Logarithms	0	7	7	0.0	5.0	5.0
Polynomial Functions	4	3	7	0.7	1.8	2.5

*Small discrepancies between parts and totals are due to rounding.

Table 41
Mathematics 30 Form B
Raw Score Averages for Cognitive Levels

Cognitive Level	Total Marks Possible			Raw Score Averages		
	Written Response	Machine Scored	Total	Written Response	Machine Scored	Total
Knowledge	0	6	6	0.0	4.0	4.0
Comprehension	0	22	22	0.0	16.3	16.3
Application	13	18	31	6.9	11.7	18.6
Higher Mental Activities	0	6	6	0.0	3.1	3.1

Table 42, on page 55, shows the percentage of students who chose each alternative (A, B, C, and D) for each machine-scored multiple-choice question on the Mathematics 30 Form B Diploma Examination. The correct response (key) for each question is also identified.

The results shown in Table 42 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' responses to questions can help to indicate strengths and weaknesses in local educational programs.

Machine-scored multiple-choice questions varied from those that students found to be difficult, such as Question 14 with only 37.6% of the students answering correctly, to those that were easy for students, such as Question 2 with 94.3% of the students answering correctly. An example of a question of average difficulty is Question 8 with 65.2% of the students answering correctly.

Table 42
Mathematics 30 Form B
Results for Machine-Scored Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	B	14.7	76.3	4.9	4.1	24	B	1.0	89.2	7.0	2.4
2	D	1.8	1.3	2.4	94.3	25	C	6.3	7.6	82.2	3.8
3	A	59.8	11.5	21.5	6.9	26	D	13.3	11.8	14.5	59.5
4	D	15.2	13.1	15.0	56.0	27	C	2.1	14.2	80.8	2.7
5	A	81.3	10.5	5.7	2.3	28	A	68.1	17.9	6.1	7.4
6	D	3.6	29.1	13.0	54.1	29	B	4.8	79.1	7.7	8.1
7	B	4.8	49.8	30.4	14.7	30	C	7.8	4.1	85.0	2.8
8	B	8.8	65.2	17.4	8.5	31	C	1.8	3.2	88.7	6.1
9	C	6.6	14.8	68.2	9.9	32	D	5.8	19.3	7.0	67.8
10	A	70.2	8.5	6.9	14.3	33	D	9.6	13.0	10.7	66.5
11	C	6.8	8.4	81.8	2.8	34	D	5.6	11.9	13.3	68.9
12	B	16.3	61.6	12.6	9.4	35	C	3.5	5.1	87.9	3.2
13	B	32.1	51.3	8.9	7.5	36	A	59.7	20.6	11.5	7.4
14	C	30.8	18.9	37.6	11.9	37	C	3.1	19.2	71.0	6.6
15	C	14.3	12.1	69.9	3.5	38	B	6.0	84.2	5.6	3.7
16	A	67.3	12.3	16.1	4.2	39	C	15.3	17.0	43.2	23.1
17	D	21.1	10.5	14.0	54.3	40	B	4.7	74.9	7.7	12.0
18	D	5.6	10.4	21.1	62.9	41	A	84.5	3.5	8.2	3.7
19	B	11.3	63.7	16.7	8.2	42	D	8.6	7.0	12.5	71.5
20	A	75.3	12.2	7.3	5.2	43	A	62.2	19.2	11.0	7.2
21	D	6.1	19.2	11.9	62.5	44	D	38.5	6.1	8.6	46.2
22	A	53.7	12.0	14.9	19.1	45	A	81.1	3.5	3.4	11.7
23	C	6.6	8.4	79.8	5.0						

*The sum of the percentages for some questions is less than 100% because the No Response category is not included. This category does not exceed 1.3% for any question.

Table 43, on page 56, shows results for individual machine-scored open-ended questions. The correct answer (key) for each question and the distribution of students who correctly answered the question, who gave incorrect answers, and who did not respond to the question are provided in the table.

Table 43
Mathematics 30 Form B
Results for Machine-Scored Open-Ended Questions

Question	Key	Distribution of Students (%)		
		Answered Correctly	Answered Incorrectly	No Response
1	007.8	64.1	33.7	2.2
2	180.0	30.5	55.2	14.3
3	008.0	43.3	46.2	10.5
4	083.9	76.8	17.4	5.8
5	004.0	60.8	33.4	5.8
6	002.7	78.8	16.4	4.9
7	006.0	47.5	39.1	13.5

On Question 1, for example, 64.1% of the students gave the correct answer of 007.8, 33.7% gave an incorrect answer, and 2.2% did not respond to the question at all.

Table 44 shows the distribution of marks for each written-response question in the Mathematics 30 Form B Diploma Examination.

Table 44
Mathematics 30 Form B
Distribution of Marks for Written-Response Questions

Question	Percentage of Students Obtaining Each Mark						
	NR*	0	1	2	3	4	5
1	2.2	2.5	5.0	10.3	15.2	64.9	
2	2.3	14.2	7.2	22.9	14.2	9.0	30.1
3	19.3	37.7	24.4	11.7	3.9	2.9	

*No Response

On Question 1, for example, 2.2% of the students did not respond to the question, 2.5% were awarded no marks for their response, 5.0% received one mark out of four, and 64.9% received full marks for their response.

Table 45 shows the provincial raw score average and the difficulty level for each written-response question in the Mathematics 30 Form B Diploma Examination. It must be noted that these averages *cannot* be directly compared since the questions were designed to be different in difficulty.

Table 45
Mathematics 30 Form B
Average Marks for Written-Response Questions

Question	Total Marks	Average	Difficulty Level*
1	4	3.3	0.83
2	5	2.8	0.56
3	4	0.7	0.18

*The difficulty level is the average divided by the total marks possible.

The first written-response question was well done by most students, although some lost one mark for incorrectly rounding off values during the solution rather than doing so as a last step. In the second written-response question, a number of students tried to use the answer from part (a) when doing part (b); i.e., they assumed $n = 25$ and then proceeded to solve for n. Most students found the third written-response question to be very difficult. They did not seem to know that if the graph touches the x-axis at (1, 0) then $(x - 1)^2$ would have to be a factor of the polynomial and, similarly, that the remaining factor would be $(x + 2)$. For those who could proceed to parts (b) and (c), many did not know that they were trying to find a third numerical factor that would ensure that the graph would pass through the given point.

SECTION 9:
BIOLOGY 30 DIPLOMA EXAMINATION RESULTS

The Biology 30 Diploma Examination consists of two parts: Part A contains multiple-choice questions worth 70% of the total examination mark, and Part B contains written-response questions worth 30% of the total examination mark.

The January 1989 Biology 30 Diploma Examination writing schedule presented a unique situation: two forms, designated Form A and Form B, were administered on separate days, Form A on January 30, 1989, and Form B on February 8, 1989. The development, administration, and marking of both forms followed parallel procedures. The same personnel were involved in each phase for both forms. Particular credit must be given to the chief marker and his committee of head markers for guiding the marking teams through the challenging task of marking both examinations with equal reliability.

The Biology 30 examinations have traditionally been constructed using field test data. Every attempt is made to construct parallel examinations with equivalent overall difficulty.

Based on field test statistics, school-awarded marks, diploma examination marks, and judgments made by 23 experienced Biology 30 teachers, it was concluded that the Biology 30 Form A and Form B diploma examinations were equivalent.

An analysis was carried out to determine whether or not students who wrote Form A and students who wrote Form B were representative of the Biology 30 student population. Results revealed that both groups of students were representative of the Biology 30 student population.

The information contained in tables 46 to 48 of this section is based on results achieved by 7 830 students: 7 006 who wrote Form A and 824 who wrote Form B.

BIOLOGY 30: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 46, on page 60, shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 46
Biology 30
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	88.2
Outstanding Level	80	20.1

*An explanation of standards is given in the appendix.

BIOLOGY 30: AVERAGES AND DISTRIBUTION OF MARKS

Table 47 shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in Biology 30.

Table 47
Biology 30
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	19.0	21.4	20.1
B (65-79)	36.3	25.6	30.4
C (50-64)	37.6	29.2	37.7
F (0-49)	7.1	23.9	11.8
Average (%)	66.7	63.2	65.4
Standard Deviation* (%)	12.7	17.7	14.6

*See footnote defining standard deviation on page 11.

The parameters shown in Table 47 should be compared with statistics in similar tables in the jurisdiction, school, and instructional group reports as an aid in interpreting strengths and weaknesses in local educational programs. It should be noted that approximately 68% of the students earned examination marks between 46% and 81%; that is, one standard deviation below and above the average of 63.2%.

Table 48 shows raw score averages and standard deviations for the written-response and multiple-choice sections of the Biology 30 Diploma Examination. Averages given in Table 48 are based on raw scores, which are the number of marks obtained on each section of the examination.

The total marks possible are identified for the written-response and multiple-choice sections.

Differences between the total Biology 30 Diploma Examination average reported in Table 47 and the examination section averages reported in Table 48 are due to rounding.

Table 48
Biology 30
Written-Response and Multiple-Choice Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Written Response	30	30	16.1	6.8
Multiple Choice	70	70	47.0	11.8

BIOLOGY 30 FORM A: SUBSCALE AND INDIVIDUAL QUESTION RESULTS

Table 49, on page 62, shows the blueprint used to develop the Biology 30 Form A Diploma Examination. Question numbers in square brackets [ ] are from the written-response section of the examination. Question numbers that are *not* enclosed in brackets are from the multiple-choice section of the examination.

Examination emphases for each reporting category and cognitive level are included in the table. Classification by reporting category and cognitive level for each question is indicated.

In addition, it should be noted that those questions identified with science process skills from the multiple-choice section are 6, 7, 15, 16, 25, 27, 31, 32, 33, 37, 38, 41, 42, 43, 48, 53, 69, and 70. Those from the written-response section are 1, 2, and 4. In total, science process skills received a mark value of 32 marks.

Table 49
Biology 30 Form A
Diploma Examination Blueprint

Reporting Category	Questions By Cognitive Level			Examination Emphasis (%)
	Knowledge	Comprehension and Application	Higher Mental Activities	
Cellular Processes	*1,2*	*3*	[1]	9
Homeostatic Mechanisms	*4*	*5,7*	*6*	4
Nutrition and Digestion	*8,9,11,18*	*10,12,13,14, 15,16,17* [2]		16
Body Fluids	*20,23,24*	*19,21,22,26, 27,28,29* [3]	*25*	15
Breathing, Gas Exchange, and Transport		*30,31* [4]	*32,33*	7
Energy Release	*34,36*	*35*	*37,38*	5
The Kidney	[5]	*39,40,41,44, 45*	*42,43*	10
Regulation of the Internal Environment	*46,50,52,54*	*47,49,51,55, 56,57* [6]	*48,53, 58,59*	20
Voluntary Movement and Body Support	[7]	*60*		4
Human Reproduction	*61,62*	*63,64,65,66, 67,68*	*69,70*	10
Examination Emphasis (%)	24	56	20	100

NOTE: Numbers in square brackets [ ] are the written-response questions. Numbers without brackets are the multiple-choice questions.

The information contained in tables 50 to 54 of this section is based on results achieved by 7 006 students who wrote Form A of the Biology 30 Diploma Examination.

Table 50, on page 64, and Table 51, on page 65, show the total marks possible and the provincial averages in raw scores for the reporting categories and cognitive levels of the written-response and the multiple-choice sections, as well as the total Biology 30 Form A Diploma Examination. It is important to stress that the averages on the various reporting categories *cannot* be directly compared with one another. Rather, the results shown in tables 50 and 51 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Table 50
Biology 30 Form A
Raw Score Averages for Reporting Categories

Reporting Category	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Cellular Processes	6	3	9	3.1	1.9	5.0*
Homeostatic Mechanisms	0	4	4	0.0	2.7	2.7
Nutrition and Digestion	5	11	16	3.2	7.3	10.5
Body Fluids	4	11	15	2.3	7.5	9.8
Breathing, Gas Exchange, and Transport	3	4	7	1.0	2.6	3.6
Energy Release	0	5	5	0.0	3.4	3.4
The Kidney	3	7	10	1.6	4.8	6.4
Regulation of the Internal Environment	6	14	20	2.6	9.5	12.1
Voluntary Movement and Body Support	3	1	4	2.2	0.7	2.9
Human Reproduction	0	10	10	0.0	6.6	6.6
Process Skills	14	18	32	7.4	11.1	18.5

*Small discrepancies between parts and totals are due to rounding.

Table 51
Biology 30 Form A
Raw Score Averages for Cognitive Levels

Cognitive Level	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Knowledge	6	18	24	3.8	12.7	16.5
Comprehension and Application	18	38	[illegible]	9.2	25.6	34.7
Higher Mental Activities	6	14	20	3.1	8.7	11.8

Table 52, on page 66, shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question on the Biology 30 Form A Diploma Examination. The correct response (key) for each question is also identified.

The results shown in Table 52 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Multiple-choice questions varied from those that students found to be difficult, such as Question 32 with only 33.6% of the students answering correctly, to those that were easy for students, such as Question 67 with 85.8% of the students answering correctly. An example of a question of average difficulty is Question 19 with 65.4% of the students answering correctly.

Table 52
Biology 30 Form A
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	D	14.8	9.0	7.1	69.0	36	B	13.8	56.3	12.9	16.9
2	C	17.7	13.2	52.0	17.0	37	D	6.7	6.0	9.6	77.6
3	D	7.1	7.4	17.2	68.3	38	C	12.7	6.0	64.9	16.4
4	C	12.5	5.5	76.8	5.3	39	B	10.4	78.9	6.4	4.3
5	D	7.3	8.1	13.4	71.1	40	A	77.8	11.3	6.5	4.4
6	D	5.3	18.9	19.5	56.2	41	D	9.0	10.0	4.3	76.7
7	A	65.9	7.1	16.0	11.0	42	D	18.6	12.4	10.6	58.4
8	B	3.1	85.1	5.6	6.2	43	A	64.0	21.0	8.3	6.6
9	A	75.9	10.1	9.9	4.1	44	D	27.9	8.5	11.1	52.4
10	D	4.5	6.1	11.9	77.5	45	B	8.5	71.1	10.3	10.0
11	D	8.1	14.1	20.1	57.7	46	B	5.7	80.7	7.9	5.7
12	A	83.5	3.3	6.7	6.5	47	B	8.1	50.2	23.4	18.2
13	C	7.1	3.4	58.5	31.0	48	C	11.5	11.3	65.5	11.5
14	B	18.3	47.5	18.1	16.0	49	C	15.5	13.0	66.6	4.9
15	B	7.4	64.7	18.4	9.4	50	A	65.8	7.9	10.5	15.7
16	A	49.8	12.6	16.5	21.1	51	C	6.9	15.5	71.4	6.2
17	C	10.2	18.4	62.7	8.7	52	B	14.7	67.4	11.9	6.0
18	A	62.3	16.6	11.7	9.3	53	B	12.8	54.8	13.8	18.4
19	D	9.8	13.5	11.3	65.4	54	C	3.4	7.2	81.5	7.8
20	B	10.3	73.7	12.1	3.9	55	B	4.2	75.0	13.7	7.0
21	D	5.4	8.7	10.4	75.5	56	C	15.7	8.2	63.9	12.2
22	B	10.5	82.5	4.3	2.7	57	C	4.7	12.2	75.2	7.9
23	A	74.5	5.1	16.3	4.1	58	C	7.6	19.2	62.1	11.0
24	D	11.8	6.2	6.5	75.5	59	A	67.6	7.7	6.7	17.9
25	D	9.7	3.5	21.1	65.6	60	D	6.5	13.6	7.8	72.0
26	B	23.0	63.3	7.4	6.3	61	A	75.1	12.0	5.9	6.9
27	C	29.9	10.7	50.5	8.9	62	D	7.0	21.4	7.6	63.9
28	A	73.1	14.3	7.3	5.3	63	C	10.4	12.3	63.6	13.8
29	C	12.9	19.6	49.3	18.0	64	A	52.4	13.8	14.8	19.0
30	B	5.1	83.9	5.0	5.9	65	B	6.1	74.4	7.2	12.3
31	A	66.3	4.0	25.3	4.4	66	B	5.5	68.6	3.8	22.0
32	C	17.9	14.2	33.6	34.2	67	B	4.3	85.8	3.7	6.1
33	C	4.6	9.7	75.1	10.6	68	D	6.4	28.1	13.6	51.9
34	A	76.0	17.1	1.7	5.3	69	C	24.7	4.2	61.1	9.9
35	C	12.4	7.4	67.3	13.0	70	D	16.0	9.1	14.9	60.1

*The sum of the percentages for some questions is less than 100% because the No Response category is not included. This category does not exceed 0.2% for any question.

Table 53 shows the distribution of marks for each written-response question in the Biology 30 Form A Diploma Examination.

Table 53
Biology 30 Form A
Distribution of Marks for Written-Response Questions

Question	Percentage of Students Obtaining Each Mark							
	NR*	0	1	2	3	4	5	6
1	3.1	10.4	22.4	11.3	8.5	6.2	11.6	26.3
2	4.1	3.2	9.2	15.0	19.5	18.6	30.4	
3	2.3	21.6	5.3	14.9	29.2	26.7		
4	1.4	45.1	22.9	14.0	16.7			
5	3.9	13.9	26.9	30.2	25.2			
6	3.5	8.9	15.1	25.4	17.2	14.4	8.5	6.9
7	2.7	3.6	15.0	32.9	45.8			

*No Response

On Question 1, for example, 3.1% of the students did not respond to the question, and 10.4% were awarded no marks for their response. The percentage of students receiving one mark out of six was 22.4%, and 26.3% received full marks (six out of six) for their response.

Table 54 shows the provincial raw score average and the difficulty level for each written-response question in the Biology 30 Form A Diploma Examination. It must be noted that these averages *cannot* be directly compared since the questions were designed to be different in difficulty.

Table 54
Biology 30 Form A
Average Marks for Written-Response Questions

Question	Total Marks	Average	Difficulty Level*
1	6	3.1	0.52
2	5	3.2	0.65
3	4	2.3	0.57
4	3	1.0	0.34
5	3	1.6	0.54
6	6	2.6	0.43
7	3	2.2	0.73

*The difficulty level is the average divided by the total marks possible.

BIOLOGY 30 FORM B: SUBSCALE AND INDIVIDUAL QUESTION RESULTS

Table 55, on page 69, shows the blueprint used to develop the Biology 30 Form B Diploma Examination. Question numbers in square brackets [ ] are from the written-response section of the examination. Question numbers that are *not* enclosed in brackets are from the multiple-choice section of the examination.

Examination emphases for each reporting category and cognitive level are included in the table. Classification by reporting category and cognitive level for each question is indicated.

In addition, it should be noted that those questions identified with science process skills from the multiple-choice section are 6, 12, 13, 15, 26, 33, 38, 40, 42, 49, 59, 60, and 66. Those from the written-response section are 1, 3, 4, and 6. In total, science process skills received a mark value of 30 marks.

Table 55
Biology 30 Form B
Diploma Examination Blueprint

Reporting Category	Questions By Cognitive Level			Examination Emphasis (%)
	Knowledge	Comprehension and Application	Higher Mental Activities	
Cellular Processes	*1,2*	*3,4*	[1]	9
Homeostatic Mechanisms	*5,7*	*8*	*6*	4
Nutrition and Digestion	*16,20* [2]	*9,10,11,12,14, 15,17,18,19*	*13*	16
Body Fluids	*23,24,27,31*	*21,22,25,26, 28,29,30,32, 34,35*	*33*	15
Breathing, Gas Exchange, and Transport	*36,37*	[3]	*38*	7
Energy Release	*41*	*39,40,43*	*42*	5
The Kidney	*45,46*	*44,47,48,49*	[4]	10
Regulation of the Internal Environment	*52,53,58*	*50,51,54,55, 57,59,60,62, 63* [5]	*56,61*	20
Voluntary Movement and Body Support			[6]	4
Human Reproduction	*64,65,67*	*66,68,69,70,* [7]		10
Examination Emphasis (%)	25	55	20	100

NOTE: Numbers in square brackets [ ] are the written-response questions. Numbers without brackets are the multiple-choice questions.

The information contained in tables 56 to 60 of this section is based on results achieved by 824 students who wrote Form B of the Biology 30 Diploma Examination.

Table 56, on page 71, and Table 57, on page 72, show the total marks possible and the provincial averages in raw scores for the reporting categories and cognitive levels of the written-response and the multiple-choice sections, as well as the total Biology 30 Form B Diploma Examination.

It is important to stress that the averages on the various reporting categories *cannot* be directly compared to one another. Rather, the results shown in tables 56 and 57 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Table 56
Biology 30 Form B
Raw Score Averages for Reporting Categories

Reporting Category	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Cellular Processes	5	4	9	2.7	2.9	5.6*
Homeostatic Mechanisms	0	4	4	0.0	2.3	2.3
Nutrition and Digestion	4	12	16	2.7	7.9	10.6
Body Fluids	0	15	15	0.0	9.8	9.8
Breathing, Gas Exchange, and Transport	4	3	7	1.9	2.3	4.2
Energy Release	0	5	5	0.0	3.4	3.4
The Kidney	4	6	10	1.5	4.0	5.5
Regulation of the Internal Environment	6	14	20	3.9	10.0	13.9
Voluntary Movement and Body Support	4	0	4	2.2	0.0	2.2
Human Reproduction	3	7	10	1.3	5.1	6.5
Process Skills	17	13	30	8.3	8.6	16.9

*Small discrepancies between parts and totals are due to rounding.

Table 57
Biology 30 Form B
Raw Score Averages for Cognitive Levels

Cognitive Level	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Knowledge	4	21	25	2.7	15.5	18.2
Comprehension and Application	13	42	55	7.1	27.7	34.8
Higher Mental Activities	13	7	20	6.4	4.5	10.9

Table 58, on page 73, shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question on the Biology 30 Form B Diploma Examination. The correct response (key) for each question is also identified.

The results shown in Table 58 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Multiple-choice questions varied from those that students found to be difficult, such as Question 29 with only 42.6% of the students answering correctly, to those that were easy for students, such as Question 64 with 90.6% of the students answering correctly. An example of a question of average difficulty is Question 48 with 64.4% of the students answering correctly.

Table 58
Biology 30 Form B
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	D	7.2	5.4	6.5	81.0	36	A	81.3	5.2	10.6	2.9
2	C	12.1	7.3	73.0	7.5	37	C	6.3	7.9	83.2	2.6
3	B	7.0	77.5	9.3	6.2	38	B	18.8	62.8	10.1	8.3
4	D	14.0	14.6	13.8	57.6	39	D	2.5	4.6	8.9	84.0
5	B	22.8	63.7	9.5	3.9	40	C	11.7	12.3	67.6	8.3
6	C	11.6	13.4	53.9	20.9	41	A	62.4	18.0	15.7	3.9
7	D	10.6	13.3	15.3	60.8	42	C	8.8	4.9	72.1	14.2
8	D	11.4	28.1	8.7	51.9	43	B	11.9	54.0	15.1	19.0
9	C	7.9	7.2	75.1	9.9	44	A	76.5	13.1	1.9	8.5
10	D	28.8	10.0	9.5	51.8	45	D	3.6	11.2	8.7	76.4
11	A	72.2	11.4	12.8	3.5	46	A	69.6	15.1	10.0	5.3
12	C	5.3	15.0	53.8	25.9	47	D	26.4	9.2	15.4	49.1
13	D	0.6	0.6	16.1	82.7	48	A	64.4	16.3	14.9	4.1
14	C	6.6	13.4	67.3	12.6	49	A	64.0	23.9	5.0	7.0
15	C	5.9	34.3	53.6	6.2	50	B	4.0	73.1	12.6	10.3
16	A	80.3	2.2	11.2	6.3	51	B	5.9	76.3	12.6	5.3
17	C	27.5	1.8	68.3	2.5	52	A	79.7	9.5	3.3	7.5
18	A	58.9	12.9	12.4	15.7	53	A	72.7	6.8	6.8	13.6
19	C	10.7	9.0	52.0	28.3	54	B	6.2	58.8	30.6	4.1
20	B	16.1	63.0	9.2	11.7	55	B	7.4	75.4	5.5	11.6
21	A	85.3	7.6	1.4	5.6	56	C	5.4	15.1	69.6	9.9
22	B	4.5	81.0	7.0	7.5	57	D	14.9	7.5	8.0	69.6
23	C	4.5	7.3	78.8	9.5	58	C	5.2	3.3	72.9	18.7
24	C	10.0	14.6	68.2	7.3	59	D	12.7	16.7	12.2	58.5
25	C	14.1	18.2	48.5	19.2	60	D	4.2	6.3	7.5	81.8
26	A	74.2	12.0	7.4	6.5	61	A	57.6	28.4	9.5	4.5
27	D	15.1	12.6	5.5	66.8	62	C	11.0	7.6	75.1	6.2
28	A	71.2	10.1	11.0	7.6	63	D	6.7	7.6	10.4	75.1
29	B	16.2	42.6	20.0	21.2	64	B	2.1	90.6	5.2	2.1
30	B	19.7	50.4	14.4	15.5	65	B	15.5	74.1	6.5	4.0
31	A	80.8	4.3	10.4	4.3	66	D	4.3	4.7	13.5	77.5
32	D	11.2	22.8	17.5	48.5	67	C	15.3	9.6	60.1	15.0
33	B	20.4	52.5	12.0	15.0	68	D	8.8	5.4	16.7	69.1
34	A	71.6	6.9	16.8	4.7	69	B	4.1	56.1	16.5	23.1
35	D	7.4	15.4	22.2	55.0	70	D	3.6	5.0	9.0	82.3

*The sum of the percentages for some questions is less than 100% because the No Response category is not included. This category does not exceed 0.2% for any question.

Table 59 shows the distribution of marks for each written-response question in the Biology 30 Form B Diploma Examination.

Table 59
Biology 30 Form B
Distribution of Marks for Written-Response Questions

Question	Percentage of Students Obtaining Each Mark							
	NR*	0	1	2	3	4	5	6
1	0.9	14.9	11.6	21.0	11.7	18.6	21.3	
2	0.6	6.3	11.4	19.3	30.7	31.7		
3	0.2	22.5	20.8	17.1	23.2	16.2		
4	0.7	7.4	50.9	26.9	12.9	1.2		
5	3.9	5.1	4.0	13.7	9.4	20.4	14.5	29.0
6	5.9	11.8	15.6	25.8	15.2	25.7		
7	2.0	17.0	44.8	20.9	15.3			

*No Response

On Question 1, for example, 0.9% of the students did not respond to the question, and 14.9% were awarded no marks for their response. The percentage of students receiving one mark out of five was 11.6%, and 21.3% received full marks (five out of five) for their response.

Table 60 shows the provincial raw score average and the difficulty level for each written-response question in the Biology 30 Form B Diploma Examination. It must be noted that these averages *cannot* be directly compared since the questions were designed to be different in difficulty.

Table 60
Biology 30 Form B
Average Marks for Written-Response Questions

Question	Total Marks	Average	Difficulty Level*
1	5	2.7	0.54
2	4	2.7	0.67
3	4	1.9	0.47
4	4	1.5	0.37
5	6	3.9	0.65
6	4	2.2	0.54
7	3	1.3	0.44

*The difficulty level is the average divided by the total marks possible.

If test construction data derived from year-end field tests are compared with diploma examination results, noteworthy patterns emerge. As a group, the lowest cognitive level (knowledge) type of multiple-choice question shows the greatest amount of mark change. Written-response questions as a group yield the least amount of mark change. This suggests that last-minute preparation (cramming) for an examination will be less useful as examination blueprints place more emphasis on the higher level type of question as well as on student-created responses.

The Biology 30 Diploma Examination will continue to support teaching strategies that emphasize the long-term development of student comprehension, application, analysis, synthesis, and evaluation thinking skills within the context of human biology. Nonetheless, the examination data suggest that if time is allocated to short-term review, it could be profitably spent on Unit VIII, Regulation of the Internal Environment. This unit in particular provides an opportunity for developing concept integration about the theme of homeostasis, which undergirds the whole course.

Written-response questions evaluate some of the facets of scientific literacy. The questions require students to identify what is relevant to a problem, to solve problems by raising hypotheses, to offer arguments and counter-arguments that can be tested by reference to data, and to utilize a common language, common models, and basic scientific knowledge.

Specific to Form A, the fourth written-response question required students to identify what was relevant for explaining the difference between inhaled and exhaled air and then to present arguments that were supported by the data. Repetition of the data in various forms was not considered relevant; e.g., CO_2 is exhaled in large quantities compared with the amount inhaled. The first written-response question elicited hypotheses and explanations that too often were stated in a general, imprecise form; e.g., the funnel contained a low concentration of sucrose. The utilization of a common language in an imprecise manner created a problem for some students in the first written-response question; e.g., the word "solution" was used when addressing the movement of water. Inaccurate models were revealed in the responses to the fourth written-response question. Students frequently tied the movement of O_2 directly to the movement of CO_2 (exchange) rather than describing their independent movements based on the diffusion gradient of each. Student responses to the third written-response question revealed a lack of basic scientific knowledge; e.g., the identity and function of blood components. Too often, generalizations were given for responses that required more specific descriptions; e.g., fight infection.

Specific to Form B, the fourth written-response question required students to identify what was relevant for explaining why the doctor could conclude that the kidneys of Patient X were functioning normally. Repetition of the data in various generalized forms was not considered relevant; e.g., the kidneys of Patient X are functioning normally because they are filtering the wastes out while still reabsorbing some needed nutrients like proteins and glucose. The sixth written-response question elicited hypotheses and explanations that too often were stated in a general, imprecise form; e.g., a body is not able to take in enough O_2. The seventh written-response question required students to compare the

condition of Rat A to Rat B. Too many responses did not clearly identify what was being compared. Inaccurate models were revealed in the responses to the third written-response question. Students frequently tied the movement of O_2 directly to the movement of CO_2 (exchange) rather than describing their independent movements based on the diffusion gradient of each. Also, generalizations were given when more specific arguments were required; e.g., a body gives off CO_2. Student response to the seventh written-response question revealed a lack of basic scientific knowledge; e.g., sources of male hormones.

Notwithstanding the above critique, many excellent answers were presented, and approximately 0.7% of the students obtained full marks (30) for the written-response section.

SECTION 10: CHEMISTRY 30 DIPLOMA EXAMINATION RESULTS

The Chemistry 30 Diploma Examination consists of two parts: Part A contains multiple-choice questions worth 80% of the total examination mark, and Part B contains written-response questions worth 20% of the total examination mark.

The information contained in all tables of this section is based on results achieved by 6 986 students.

CHEMISTRY 30: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 61 shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 61
Chemistry 30
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	89.9
Outstanding Level	80	19.0

*An explanation of standards is given in the appendix.

CHEMISTRY 30: AVERAGES AND DISTRIBUTION OF MARKS

Table 62, on page 78, shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in Chemistry 30.

Table 62
Chemistry 30
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	21.5	19.2	19.0
B (65-79)	36.1	28.5	34.8
C (50-64)	33.9	32.3	36.1
F (0-49)	8.5	20.1	10.1
Average (%)	67.4	63.7	66.0
Standard Deviation* (%)	13.3	16.2	14.0

*See footnote defining standard deviation on page 11.

The parameters shown in Table 62 should be compared with statistics in similar tables in the jurisdiction, school, and instructional group reports as an aid in interpreting strengths and weaknesses in local educational programs. It should be noted that approximately 68% of the students earned examination marks between 48% and 80%; that is, one standard deviation below and above the average of 63.7%.

Table 63, on page 79, shows raw score averages and standard deviations for the written-response and multiple-choice sections of the Chemistry 30 Diploma Examination. Averages given in Table 63 are based on raw scores, which are the number of marks obtained on each section of the examination.

The total marks possible are identified for the written-response and multiple-choice sections.

Differences between the total Chemistry 30 Diploma Examination average reported in Table 62 and the examination section averages reported in Table 63 are due to rounding.

Table 63
Chemistry 30
Written-Response and Multiple-Choice Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Written Response	14	20	7.7	3.1
Multiple Choice	56	80	36.9	9.2

CHEMISTRY 30: SUBSCALE AND INDIVIDUAL QUESTION RESULTS

Table 64, on page 80, shows the blueprint used to develop the Chemistry 30 Diploma Examination. Question numbers in square brackets [ ] are from the written-response section of the examination. Question numbers that are *not* enclosed in brackets are from the multiple-choice section of the examination.

Examination emphases for each reporting category and cognitive level are included in the table. Classification by reporting category and cognitive level for each question is indicated.

In addition, it should be noted that those questions identified with science process skills from the multiple-choice section are 2, 4, 8, 9, 10, 12, 14, 15, 16, 17, 19, 20, 21, 22, 29, 32, 33, 34, 37, 41, 46, 47, 48, 51, 52, 53, 54, and 56. Those from the written-response section are 1 and 2. In total, science process skills received a mark value of 38 marks.

Table 64
Chemistry 30
Diploma Examination Blueprint

Reporting Category	Questions By Cognitive Level			Examination Emphasis (%)
	Knowledge	Comprehension and Application	Higher Mental Activities	
Chemical Energetics	*1,2,5,6,8,* [1]	*3,4,7,9,10,11, 12,15,16,18* [1]	*13,14,17*	34
Acids and Bases	*19,21,23,26, 28,30*	*20,22,24,25, 27,29,31,34, 35,36,37*	*32,33* [2]	33
Oxidation-Reduction	*38,39,43,50, 55* [3]	*40,42,44,45, 46,47,48,49, 52,53,56* [3]	*41,51,54*	33
Examination Emphasis (%)	32	51	17	100

NOTE: Numbers in square brackets [ ] are the written-response questions. Numbers without brackets are the multiple-choice questions.

Scores on written-response questions 1 and 3 are included in the Comprehension and Application category in the reporting.

Tables 65 and 66, on page 81, show the total marks possible and the provincial averages in raw scores for the reporting categories and cognitive levels of the written-response and the multiple-choice sections, as well as the total Chemistry 30 Diploma Examination.

It is important to stress that the averages on the various reporting categories *cannot* be directly compared with one another. Rather, the results shown in tables 65 and 66 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Table 65
Chemistry 30
Raw Score Averages for Reporting Categories

Reporting Category	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Chemical Energetics	6	18	24	3.3	12.6	15.9*
Acids and Bases	4	19	23	1.4	12.3	13.7
Oxidation-Reduction	4	19	23	3.0	12.0	14.9
Process Skills	10	28	38	4.7	16.9	21.6

*Small discrepancies between parts and totals are due to rounding.

Table 66
Chemistry 30
Raw Score Averages for Cognitive Levels

Cognitive Level	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Knowledge	0	16	16	0.0	11.6	11.6
Comprehension and Application	10	32	42	6.3	20.9	27.2
Higher Mental Activities	4	8	12	1.4	4.4	5.8

Table 67 shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question on the Chemistry 30 Diploma Examination. The correct response (key) for each question is also identified.

The results shown in Table 67 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Multiple-choice questions varied from those that students found to be difficult, such as Question 52 with only 26.8% of the students answering correctly, to those that were easy for students, such as Question 12 with 85.9% of the students answering correctly. An example of a question of average difficulty is Question 21 with 65.4% of the students answering correctly.

Table 67
Chemistry 30
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%) A	B	C	D	Item	Key	Distribution of Responses (%) A	B	C	D
1	D	3.6	6.2	6.2	84.0	29	B	15.8	46.7	13.1	24.4
2	A	47.3	3.9	44.7	4.0	30	D	9.2	5.5	9.0	76.3
3	D	7.8	5.8	13.7	72.7	31	D	16.2	4.4	13.8	65.6
4	A	63.4	16.9	13.6	5.2	32	C	70.6	15.2	7.6	6.5
5	C	12.0	5.4	70.2	12.4	33	C	6.0	15.1	72.6	6.2
6	B	32.0	61.6	4.0	2.3	34	A	71.0	7.9	16.0	5.0
7	C	4.0	22.3	63.9	9.6	35	B	1.9	87.6	2.4	8.1
8	B	1.8	81.3	13.4	3.4	36	A	68.7	10.5	11.7	8.7
9	C	3.8	12.0	77.2	6.9	37	C	15.9	7.2	61.8	15.0
10	C	5.8	6.7	76.3	10.9	38	D	7.5	8.2	30.0	54.2
11	A	55.3	14.7	4.8	25.1	39	A	79.9	4.4	4.4	11.3
12	C	2.1	7.5	85.9	4.4	40	D	8.1	6.7	8.0	77.1
13	D	3.7	13.7	3.5	78.9	41	C	9.8	10.7	74.9	4.5
14	D	7.8	24.0	26.2	41.8	42	C	4.2	2.6	90.6	2.5
15	A	72.5	6.5	12.4	8.5	43	D	3.2	2.4	8.2	86.1
16	B	5.1	72.7	12.5	9.3	44	C	23.3	15.2	51.7	9.6
17	C	22.4	5.7	66.9	5.0	45	D	4.8	28.2	16.1	50.8
18	B	3.1	84.7	8.4	3.7	46	D	6.6	11.0	19.7	62.4
19	B	5.6	77.0	6.7	10.6	47	B	6.6	51.1	37.6	4.1
20	C	10.7	6.5	79.2	3.6	48	D	4.1	3.6	30.2	62.0
21	D	11.0	11.3	12.2	65.4	49	A	67.1	9.2	13.2	10.3
22	A	40.7	25.8	21.9	11.2	50	C	5.8	3.7	85.9	4.5
23	B	3.4	84.0	7.8	4.8	51	B	20.9	39.1	27.3	12.4
24	C	6.8	4.9	71.5	16.7	52	A	26.8	25.3	34.7	13.1
25	B	11.7	69.4	11.4	7.4	53	A	58.7	22.3	6.4	12.4
26	D	4.3	9.0	8.0	78.7	54	A	56.5	10.7	23.5	8.7
27	D	3.6	37.1	5.2	54.1	55	C	7.0	8.0	69.3	15.5
28	B	26.3	53.8	14.7	5.1	56	B	13.8	51.9	16.0	17.6

*The sum of the percentages for some questions is less than 100% because the No Response category is not included. This category does not exceed 0.4% for any question.

Table 68 shows the distribution of marks for each written-response question in the Chemistry 30 Diploma Examination.

Table 68
Chemistry 30
Distribution of Marks for Written-Response Questions

Question	Percentage of Students Obtaining Each Mark							
	NR*	0	1	2	3	4	5	6
1	4.1	5.0	4.9	11.4	19.7	32.6	18.6	3.7
2	8.2	30.7	18.5	21.3	9.0	12.2		
3	2.6	4.0	7.9	14.4	26.6	44.6		

*No Response

On Question 1, for example, 4.1% of the students did not respond to the question, and 5.0% were awarded no marks for their response. The percentage of students receiving one mark out of six was 4.9%, and 3.7% received full marks (six out of six) for their response.

Table 69 shows the provincial raw score average and the difficulty level for each written-response question in the Chemistry 30 Diploma Examination. It must be noted that these averages *cannot* be directly compared since the questions were designed to be different in difficulty.

Table 69
Chemistry 30
Average Marks for Written-Response Questions

Question	Total Marks	Average	Difficulty Level*
1	6	3.3	0.55
2	4	1.4	0.34
3	4	3.0	0.74

*The difficulty level is the average divided by the total marks possible.

The level of student performance on the Chemistry 30 Diploma Examination indicated good overall achievement. Students are successfully learning basic facts and definitions.

In the first written-response question (average 55.5%), most students were able to graphically determine an appropriate value for the molar heat of formation; however, a significant number of students showed insufficiently developed graphing skills, and as a result, their interpolated values were outside the acceptable range of values. As in the previous year, students displayed an inability to distinquish between the heat of formation and the heat of combustion. There was also confusion in distinguishing between intermolecular and intramolecular forces, as well as bond breaking (endothermic) and bond forming (exothermic) processes. The most poorly answered component of the question was the failure to make a concluding statement incorporating the existence of a regularity and bond energies.

Answers to the second written-response question (average 34.3%) varied greatly, from successful identification of several features to a total lack of understanding of pH and titration curves. There was a wide range of misconceptions. A significant number of students did not appear to know what or where an equivalence point is or how many equivalence points a monoprotic acid titration should have. In a few cases, some students confused the diagram with an exothermic phase diagram. However, the students who successfully identified features on the graph generally picked out a combination of initial pH, final pH, or equivalence point volume from the graph as inconsistent with the information provided. These students normally were successful in supporting their selection; the only common error was the omission or inversion of the mole ratio between reactants. A weakness displayed by a majority of students was their inability to present a final answer in a clear, concise, and understandable manner.

In the third written-response question (average 73.8%), the majority of students were able to successfully determine the correct reactants and construct an appropriate cell. The diagrams of the cell were fairly standard, although some cell designs suggested a lack of familiarity with cell construction. The most common omission in the diagram was a level indication for solutions in the container. In addition, many diagrams lacked essential components, making the cell inoperable even though the selection of reagents was appropriate. Most students had no difficulty in identifying the anode and cathode, although confusion arose when a sign was assigned to the electrode. The most common misconception noted was the idea that electrons flow through the solution from electrode to electrode.

SECTION 11:
PHYSICS 30 DIPLOMA EXAMINATION RESULTS

The Physics 30 Diploma Examination consists of two parts: Part A contains multiple-choice questions worth 70% of the total examination mark, and Part B contains written-response questions worth 30% of the total examination mark.

The information contained in all tables of this section is based on results achieved by 2 888 students.

PHYSICS 30: PERCENTAGE OF STUDENTS ACHIEVING STANDARDS

Table 70 shows the percentage of students achieving provincial standards. These standards are the minimum acceptable level (pass of 50%) and the outstanding level (80% or better).

Table 70
Physics 30
Percentage of Students Achieving Standards*

Level of Standard	Final Blended Mark Representing Standard (%)	Percentage of Students Achieving Standard
Minimum Acceptable Level	50	90.5
Outstanding Level	80	24.1

*An explanation of standards is given in the appendix.

PHYSICS 30: AVERAGES AND DISTRIBUTION OF MARKS

Table 71, on page 86, shows the percentage distributions by letter grade of school-awarded marks, diploma examination marks, and final blended marks in Physics 30.

Table 71
Physics 30
Provincial Percentage Distribution of A, B, C, and F Grades, Averages, and Standard Deviations of Scores

Score (%)	School-Awarded Mark	Diploma Examination Mark	Final Blended Mark
A (80-100)	25.2	24.8	24.1
B (65-79)	40.2	29.6	35.0
C (50-64)	28.2	26.0	31.5
F (0-49)	6.4	19.6	9.5
Average (%)	69.3	65.2	67.7
Standard Deviation* (%)	13.1	17.3	14.4

*See footnote defining standard deviation on page 11.

The parameters shown in Table 71 should be compared with statistics in similar tables in the jurisdiction, school, and instructional group reports as an aid in interpreting strengths and weaknesses in local educational programs. It should be noted that approximately 68% of the students earned examination marks between 48% and 83%; that is, one standard deviation below and above the average of 65.2%.

Table 72, on page 87, shows raw score averages and standard deviations for the written-response and multiple-choice sections of the Physics 30 Diploma Examination. Averages given in Table 72 are based on raw scores, which are the number of marks obtained on each section of the examination.

The total marks possible are identified for the written-response and multiple-choice sections.

Differences between the total Physics 30 Diploma Examination average reported in Table 71 and the examination section averages reported in Table 72 are due to rounding.

Table 72
Physics 30
Written-Response and Multiple-Choice Raw Score Totals

Examination Section	Total Marks Possible	Weighting (%)	Average Raw Score	Standard Deviation
Written Response	21	30	11.0	4.5
Multiple Choice	49	70	34.5	8.4

PHYSICS 30: SUBSCALE AND INDIVIDUAL QUESTION RESULTS

Table 73, on page 88, shows the blueprint used to develop the Physics 30 Diploma Examination. Question numbers in square brackets [ ] are from the written-response section of the examination. Question numbers that are *not* enclosed in brackets are from the multiple-choice section of the examination.

Examination emphases for each reporting category and cognitive level are included in the table. Classification by reporting category and cognitive level for each question is indicated.

In addition, it should be noted that those questions identified with science process skills from the multiple-choice section are 7, 11, 14, 17, 19, 21, 25, 28, 30, 31, 37, and 45. Those from the written-response section are 1, 2, 3, and 4. In total, science process skills received a mark value of 33 marks.

Table 73
Physics 30
Diploma Examination Blueprint

Reporting Category	Questions By Cognitive Level			Examination Emphasis (%)
	Knowledge	Comprehension and Application	Higher Mental Activities	
Light	*3, 5, 9, 10*	*1,2,4,6,7,8, 11*	[1]	23
Electric and Magnetic Fields	*13,18,22, 24*	*12,15,16,17, 20,23* [2]	*14,19,21*	27
EM Radiation	*26,33,34*	*25,27,28,29, 30,31,32*		14
Structure of Matter	*36,40,42*	*35,38,39,41, 43* [3]	*37*	20
Modern Physical Theories	*44,46,48*	*45,47,49*	[4]	16
Examination Emphasis (%)	24	56	20	100

NOTE: Numbers in square brackets [ ] are the written-response questions. Numbers without brackets are the multiple-choice questions.

Tables 74 and 75, on page 89, show the total marks possible and the provincial averages in raw scores for the reporting categories and cognitive levels of the written-response and the multiple-choice sections, as well as the total Physics 30 Diploma Examination.

It is important to stress that the averages on the various reporting categories *cannot* be directly compared with one another. Rather, the results shown in tables 74 and 75 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' response to questions can help to indicate strengths and weaknesses in local educational programs.

Table 74
Physics 30
Raw Score Averages for Reporting Categories

Reporting Category	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Light	5	11	16	3.2	8.0	11.2*
Electric and Magnetic Fields	6	13	19	3.3	9.0	12.3
EM Radiation	0	10	10	0.0	6.9	6.9
Structure of Matter	5	9	14	2.1	6.4	8.5
Modern Physical Theories	5	6	11	2.4	4.4	6.8
Process Skills	21	12	33	11.0	7.9	18.9

*Small discrepancies between parts and totals are due to rounding.

Table 75
Physics 30
Raw Score Averages for Cognitive Levels

Cognitive Level	Total Marks Possible			Raw Score Averages		
	Written Response	Multiple Choice	Total	Written Response	Multiple Choice	Total
Knowledge	0	17	17	0.0	11.8	11.8
Comprehension and Application	11	28	39	5.4	20.2	25.6
Higher Mental Activities	10	4	14	5.6	2.5	8.2

Table 76 shows the percentage of students who chose each alternative (A, B, C, and D) for each multiple-choice question on the Physics 30 Diploma Examination. The correct response (key) for each question is also identified.

The results shown in Table 76 can best be used in conjunction with the parallel tables in the jurisdiction, school, and instructional group reports. Variations in patterns of students' responses to questions can help to indicate strengths and weaknesses in local educational programs.

Multiple-choice questions varied from those that students found to be difficult, such as Question 9 with only 24.3% of the students answering correctly, to those that were easy for students, such as Question 2 with 92.3% of the students answering correctly. An example of a question of average difficulty is Question 14 with 65.5% of the students answering correctly.

Table 76
Physics 30
Results for Individual Multiple-Choice Questions*

Item	Key	Distribution of Responses (%)				Item	Key	Distribution of Responses (%)			
		A	B	C	D			A	B	C	D
1	C	6.2	8.8	80.3	4.8	26	C	20.0	8.0	64.4	7.6
2	B	2.9	92.3	2.6	2.2	27	D	4.8	11.9	14.2	68.9
3	D	9.9	4.5	3.1	82.4	28	A	84.3	7.8	3.6	4.3
4	B	5.1	79.6	11.1	4.2	29	B	2.2	83.3	10.2	4.3
5	B	8.8	73.8	8.4	9.0	30	A	50.5	11.3	32.3	5.9
6	D	2.2	30.3	6.4	61.1	31	D	8.1	7.9	19.2	64.8
7	D	10.5	4.5	21.8	63.2	32	B	12.5	55.3	8.3	23.8
8	A	81.6	9.9	6.3	1.9	33	C	9.4	6.0	72.0	12.5
9	A	24.3	40.5	20.5	14.7	34	B	10.1	77.6	5.1	7.2
10	A	79.4	17.0	0.6	3.0	35	A	58.7	11.9	18.8	10.1
11	D	7.0	11.7	4.9	76.4	36	C	14.0	5.8	70.6	9.6
12	D	3.8	2.4	11.0	82.8	37	C	5.4	4.7	77.1	12.8
13	B	19.8	72.2	4.5	3.5	38	D	1.2	10.5	5.8	82.5
14	C	12.4	11.5	65.5	10.4	39	B	5.8	82.2	7.6	4.3
15	A	88.3	5.6	3.6	2.4	40	C	10.8	13.4	70.9	4.9
16	D	2.8	4.6	30.0	62.6	41	A	74.6	5.2	14.8	5.4
17	C	14.7	14.4	64.2	6.3	42	C	9.7	21.9	60.0	8.2
18	A	65.6	10.8	8.2	15.2	43	B	5.9	59.9	14.5	18.9
19	C	3.5	21.0	59.4	15.4	44	B	7.5	78.1	4.7	9.7
20	A	80.3	6.5	7.0	6.0	45	D	14.6	6.2	11.8	66.6
21	D	25.6	11.4	10.8	51.9	46	A	74.6	18.2	2.3	5.0
22	C	9.2	3.9	76.7	10.1	47	B	5.2	80.1	9.8	4.6
23	B	7.1	60.4	25.8	6.5	48	C	10.5	7.5	69.9	12.1
24	D	10.2	7.1	18.0	64.7	49	A	64.5	15.6	10.7	9.0
25	B	18.8	65.2	11.6	4.5						

***The sum of the percentages for some questions is less than 100% because the No Response category is not included. This category does not exceed 0.9% for any question.**

Table 77 shows the distribution of marks for each written-response question in the Physics 30 Diploma Examination.

Table 77
Physics 30
Distribution of Marks for Written-Response Questions

Question	Percentage of Students Obtaining Each Mark							
	NR*	0	1	2	3	4	5	6
1	1.3	11.1	9.1	9.3	12.2	30.1	26.9	
2	0.3	1.8	8.8	19.9	25.8	22.8	9.5	11.1
3	2.4	11.8	14.9	29.9	31.0	9.0	1.0	
4	5.3	5.9	26.4	18.4	14.7	15.2	14.2	

*No Response

On Question 1, for example, 1.3% of the students did not respond to the question, and 11.1% were awarded no marks for their response. The percentage of students receiving one mark out of five was 9.1%, and 26.9% received full marks (five out of five) for their response.

Table 78 shows the provincial raw score average and the difficulty level for each written-response question in the Physics 30 Diploma Examination. It must be noted that these averages *cannot* be directly compared since the questions were designed to be different in difficulty.

Table 78
Physics 30
Average Marks for Written-Response Questions

Question	Total Marks	Average	Difficulty Level*
1	5	3.2	0.64
2	6	3.3	0.55
3	5	2.1	0.42
4	5	2.4	0.48

*The difficulty level is the average divided by the total marks possible.

Student performance on the Physics 30 Diploma Examination was generally satisfactory. The average of 70.4% on the multiple-choice section was good, and the previous pattern of excellence in answering the calculation questions was maintained. There remained some difficulties in understanding the development processes involved in physics theory (only 24.3% of students correctly answered Question 9, on the rejection of the Newtonian particle model of light) and in understanding the vector nature of the electric and magnetic fields (30% of the responses to questions 16 and 23 had the field directions reversed).

The format of the written-response section of the examination was new. The section weighting increased from 20% to 30% of the total, and the question emphasis shifted from routine calculation to nonroutine problem solving. Students responded well to the changed emphasis, and performance was maintained at a level comparable to previous administrations.

The *Provincial Report* detailing the June 1988 administration noted that there had been many highly abbreviated solutions to problems in the written-response section. By contrast, students' written responses on this examination were generally clear and complete, which made it possible to mark the questions without having to assume missing steps in the solutions.

The first written-response question was very well answered, with many complete and well-organized solutions. The only difficulty was with the treatment of significant figures after the subtraction step. Many students gave a response of 3.06° for the final spectrum width, not recognizing that the initial precision of the angle was to the nearest 0.1°.

The second written-response question was answered much better than previous graph questions. Students could find an approximate value of 5Ω for the resistance, but it was clear that there is no provincial consensus on the detailed procedures necessary to compute accurate averages from graphs and from data sets.

The third written-response question yielded disappointing results, as it was evident that most students thought of the photoelectric effect as a mere calculation procedure rather than as an important milestone in physics. Of the seven assumptions made by Einstein, students could list only one or two. Most students were unaware that the status of the photoelectric equation was at the level of individual electrons and photons rather than at the level of total energy inputs and total energy outputs.

The fourth written-response question was a challenging one, designed to test whether students could extract numerical values from a written description of an unfamiliar process and then apply this information to a situation more similar to a Physics 20 calculation (the bullet and gun problem). Students responded very well to this challenge, with 29.4% completing the problem perfectly or with only one minor error.

SECTION 12: RESULTS FOR POPULATION SUBGROUPS

Introduction

The majority of students who wrote the January 1989 diploma examinations took the course in school and did not have mature status. (For a definition of mature student status, please see the *Junior-Senior High School Handbook 1988-89*, pages 41 and 42.) The second largest group consisted of students who took the course in school and had mature status.

When a student has mature status and receives a diploma examination mark that is higher than that student's school-awarded mark, the diploma examination mark becomes the final mark; otherwise, the normal blending of the two marks is used to calculate the final mark.

The preceding sections of this report present results for all students who wrote a diploma examination during this sitting and had a school-awarded mark in that course. The results for students whose school-awarded mark was brought forward from an earlier term are included, and the results for students with no school-awarded mark are excluded.

Students who wrote the examination can be grouped on the basis of whether or not they have mature status and when they received instruction in the course. The purpose of this section is to show the results for those subgroups.

Subgroup Definitions

This section of the report presents results for students in several subgroups of the population, grouped by the combination of mature status and school-awarded mark status that applies to the members of each subgroup. The following subgroups have been identified:

- All Regular School: students who had a current school-awarded mark and a current examination mark.
- Non-adult Regular School: students who had a current school-awarded mark and a current examination mark, and who did not have mature status. *(Students in this group are also included in the first group.)*
- Adult Regular School: students who had a current school-awarded mark and a current examination mark, and who had mature status. *(Students in this group are also included in the first group.)*
- Non-adult School Mark Brought Forward: students who did not have mature status, had no current school-awarded mark, and had an earlier school-awarded mark.
- Adult School Mark Brought Forward: students who had mature status, had no current school-awarded mark, and had an earlier school-awarded mark.

- Adult Challenging Examination: students who had mature status and who had no school-awarded mark.

- Non-adult No School Mark: students who did not have mature status and who had no school-awarded mark.

The last two subgroups are not included in the other results in this report. Adults challenging an examination receive course credit if they pass the examination; students without mature status receive no credit.

Note that the terms "adult" and "non-adult" are used to identify in brief form students with mature status ("adult") and without mature status ("non-adult") as defined in the *Junior-Senior High School Handbook 1988-89*; they are not used here in the legal sense.

Excluded Groups

Not included in any of the groups are students who were exempt from all or part of the examination or who wrote a substantially different form of the examination because of special considerations. Students in English 30 or English 33 who wrote the two parts of the examination in two different examination sittings (e.g., January and June) are also excluded. Very few students fall into these categories.

Organization of Tables

Three tables are provided for each diploma examination subject. The first shows the number and percentage of students with and without mature status. The second summarizes the frequency, average school-awarded mark, and standard deviation of school-awarded marks for those subgroups that have school-awarded marks. The third table gives the frequency and the average and standard deviation of the total examination score, the written-response score, and the multiple-choice score for all subgroups.

Two additional tables that summarize the data in the subject tables are included after the subject tables.

These tables are not provided as part of the jurisdiction, school, and instructional group reports, as nearly all students in most schools and jurisdictions are in the Non-adult Regular School subgroup. Superintendents of jurisdictions that have significant numbers of students in the other subgroups may request these figures for their jurisdictions and schools from the Student Evaluation and Records Branch.

Table 79
English 30
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	7597	81.5
Adult	1729	18.5
Total	9326	100.0

Table 80
English 30
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	8978	65.4	11.8
Non-adult Regular School	7489	65.9	11.8
Adult Regular School	1489	63.1	11.6
Non-adult School Mark Brought Forward	73	60.0	12.6
Adult School Mark Brought Forward	62	64.1	9.5

Table 81
English 30
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%) Average	Total Score (%) S.D.‡	Written-Response Raw Score* Average	Written-Response Raw Score* S.D.	Multiple-Choice Raw Score† Average	Multiple-Choice Raw Score† S.D.
All Regular School	8978	63.6	11.6	31.4	6.3	50.8	10.9
Non-adult Regular School	7489	64.1	11.5	31.6	6.2	51.2	10.7
Adult Regular School	1489	60.9	12.1	30.1	6.7	48.6	11.3
Non-adult School Mark Brought Forward	73	56.1	12.6	28.3	6.6	43.5	11.6
Adult School Mark Brought Forward	62	54.7	11.4	26.4	6.5	44.6	10.3
Adult Challenging Examination	178	60.0	14.5	28.2	8.3	50.0	12.2
Non-adult No School Mark	35	55.0	8.1	27.6	4.4	43.2	7.9

*Maximum written-response raw score is 50 marks
†Maximum multiple-choice raw score is 79 marks
‡S.D. -- Standard Deviation

Nearly one-fifth of English 30 students writing the January diploma examination had mature status. Adults with current school marks received slightly lower school-awarded and examination marks than non-adults with current school marks. Those adults who chose to challenge the examination had an average examination score (60.0%) very similar to that for adults with current school marks (60.9%), with a higher average on the multiple-choice section of the examination and a lower average on the written-response section.

Students (adult or non-adult) with school marks brought forward had noticeably lower average examination scores than those with current school marks. Non-adults with school marks brought forward had noticeably lower school marks than non-adults with current school marks. These statistics indicate that it is the weaker students among non-adults who choose to write the examination without receiving further instruction.

Table 82
English 33
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	3613	87.4
Adult	522	12.6
Total	4135	100.0

Table 83
English 33
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	3929	61.2	10.4
Non-adult Regular School	3570	60.9	10.3
Adult Regular School	359	63.3	11.5
Non-adult School Mark Brought Forward	18	56.4	10.4
Adult School Mark Brought Forward	8	53.3	6.2

Table 84
English 33
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%) Average	Total Score (%) S.D.‡	Written-Response Raw Score* Average	Written-Response Raw Score* S.D.	Multiple-Choice Raw Score† Average	Multiple-Choice Raw Score† S.D.
All Regular School	3929	62.7	12.1	30.5	5.8	43.0	10.7
Non-adult Regular School	3570	62.9	11.8	30.6	5.6	43.1	10.5
Adult Regular School	359	60.5	15.3	29.2	7.4	41.7	12.9
Non-adult School Mark Brought Forward	18	50.3	17.1	24.9	8.0	33.7	13.9
Adult School Mark Brought Forward	8	38.0	9.1	18.3	5.1	25.6	7.3
Adult Challenging Examination	155	67.7	14.7	31.6	7.0	48.3	12.1
Non-adult No School Mark	25	63.7	15.4	30.8	6.8	44.0	13.5

*Maximum written-response raw score is 50 marks
†Maximum multiple-choice raw score is 67 marks
‡S.D. -- Standard Deviation

About one in eight English 33 students writing the January diploma examination had mature status. Those adults with current school marks tended to receive higher school marks and lower examination marks than non-adults with current school marks.

Only 26 students (adult and non-adult) had school marks brought forward for blending with their January 1989 examination mark. These students were lower than average on both the examination and the school-awarded marks.

Adults challenging the examination did quite well on average, exceeding the regular students' average on both written-response and multiple-choice sections of the examination.

Table 85
Social Studies 30
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	7652	90.6
Adult	797	9.4
Total	8449	100.0

Table 86
Social Studies 30
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	8302	66.0	12.3
Non-adult Regular School	7585	66.1	12.3
Adult Regular School	717	65.1	12.4
Non-adult School Mark Brought Forward	32	58.8	13.2
Adult School Mark Brought Forward	13	60.1	11.9

Table 87
Social Studies 30
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%) Average	Total Score (%) S.D.‡	Written-Response Raw Score* Average	Written-Response Raw Score* S.D.	Multiple-Choice Raw Score† Average	Multiple-Choice Raw Score† S.D.
All Regular School	8302	62.9	13.9	16.2	4.5	45.7	10.8
Non-adult Regular School	7585	63.1	13.9	16.3	4.5	45.8	10.8
Adult Regular School	717	61.0	13.6	15.5	4.5	44.6	10.7
Non-adult School Mark Brought Forward	32	46.3	13.3	11.9	4.2	33.8	10.7
Adult School Mark Brought Forward	13	46.5	9.9	12.1	2.3	33.6	8.5
Adult Challenging Examination	67	58.1	13.8	14.5	4.5	42.8	10.7
Non-adult No School Mark	35	60.4	15.2	14.9	4.1	44.7	11.8

*Maximum written-response raw score is 50 marks
†Maximum multiple-choice raw score is 69 marks
‡S.D. -- Standard Deviation

Fewer than one in ten Social Studies 30 students writing the January diploma examination had mature status. Those adults with current school marks tended to receive slightly lower school marks and examination marks than non-adults with current school marks.

The 45 students who had previously received school marks and who wrote the examination without further instruction had lower school-awarded marks and much lower examination marks than those with current school marks.

Adults challenging the examination did less well on average than students with current school marks.

Table 88
Mathematics 30
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	7364	81.6
Adult	1656	18.4
Total	9020	100.0

Table 89
Mathematics 30
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	8809	68.0	14.6
Non-adult Regular School	7288	68.4	14.6
Adult Regular School	1521	66.3	14.8
Non-adult School Mark Brought Forward	39	57.7	17.3
Adult School Mark Brought Forward	37	56.3	13.3

Table 90
Mathematics 30
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%)		Written-Response Raw Score*		Machine-Scored Raw Score†	
		Average	S.D.‡	Average	S.D.	Average	S.D.
All Regular School	8809	65.9	18.5	7.7	3.9	35.1	9.0
Non-adult Regular School	7288	66.9	18.4	7.9	3.9	35.5	8.9
Adult Regular School	1521	61.5	18.2	7.1	4.0	32.8	8.8
Non-adult School Mark Brought Forward	39	53.9	21.3	5.5	3.8	29.4	11.0
Adult School Mark Brought Forward	37	44.3	15.9	3.8	3.5	24.9	8.1
Adult Challenging Examination	98	52.9	20.3	5.4	4.4	28.9	9.7
Non-adult No School Mark	37	50.6	21.2	5.1	4.2	27.9	10.3

*Maximum written-response raw score is 13 marks
†Maximum machine-scored raw score is 52 marks (45 multiple-choice and 7 open-ended questions)
‡S.D. -- Standard Deviation

About one in five Mathematics 30 students writing the January diploma examination had mature status.

Non-adult students with current school marks achieved the highest average in both school-awarded marks and examination marks.

The average of school-awarded marks for students with regular school marks showed very little difference between non-adults and adults.

However, the average of examination marks for students with regular school marks was significantly higher for non-adults than for adults.

Students with no regular instruction were not as successful as those students in the regular school subgroup.

Table 91
Biology 30
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	6702	84.2
Adult	1261	15.8
Total	7963	100.0

Table 92
Biology 30
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	7753	66.8	12.7
Non-adult Regular School	6625	66.4	12.7
Adult Regular School	1128	68.7	12.4
Non-adult School Mark Brought Forward	46	56.4	13.1
Adult School Mark Brought Forward	31	59.2	9.2

Table 93
Biology 30
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%)		Written-Response Raw Score*		Multiple-Choice Raw Score†	
		Average	S.D.‡	Average	S.D.	Average	S.D.
All Regular School	7753	63.4	17.6	16.2	6.8	47.1	11.7
Non-adult Regular School	6625	63.1	17.8	16.1	6.9	46.9	11.8
Adult Regular School	1128	64.8	16.6	16.4	6.6	48.3	11.1
Non-adult School Mark Brought Forward	46	49.2	14.1	11.0	5.5	38.2	10.4
Adult School Mark Brought Forward	31	44.9	9.5	8.5	5.1	36.4	6.6
Adult Challenging Examination	102	59.1	18.8	14.2	7.3	44.9	12.5
Non-adult No School Mark	31	54.4	17.4	13.2	7.2	41.2	11.1

*Maximum written-response raw score is 30 marks
†Maximum multiple-choice raw score is 70 marks
‡S.D. -- Standard Deviation

About one in six Biology 30 students writing the January diploma examination had mature status.

Adult students with regular school marks achieved the highest average in both school-awarded marks and examination marks.

The average of school-awarded marks and the average of examination marks for students with regular school marks showed very little difference between non-adults and adults.

Students with no regular instruction were not as successful as those students in the regular school subgroup.

Table 94
Chemistry 30
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	5902	83.4
Adult	1177	16.6
Total	7079	100.0

Table 95
Chemistry 30
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	6934	67.4	13.2
Non-adult Regular School	5851	67.3	13.2
Adult Regular School	1083	68.2	13.1
Non-adult School Mark Brought Forward	27	58.4	19.1
Adult School Mark Brought Forward	25	58.5	14.1

Table 96
Chemistry 30
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%) Average	Total Score (%) S.D.‡	Written-Response Raw Score* Average	Written-Response Raw Score* S.D.	Multiple-Choice Raw Score† Average	Multiple-Choice Raw Score† S.D.
All Regular School	6934	63.8	16.1	7.7	3.0	37.0	9.2
Non-adult Regular School	5851	63.8	16.3	7.8	3.0	36.8	9.3
Adult Regular School	1083	64.0	15.1	7.1	3.1	37.6	8.4
Non-adult School Mark Brought Forward	27	54.0	18.7	6.0	3.6	31.6	10.2
Adult School Mark Brought Forward	25	42.0	11.8	4.1	2.5	25.1	6.9
Adult Challenging Examination	69	54.2	17.7	5.6	3.5	32.2	9.8
Non-adult No School Mark	24	64.1	28.1	7.5	4.4	37.3	15.7

*Maximum written-response raw score is 14 marks
†Maximum multiple-choice raw score is 56 marks
‡S.D. -- Standard Deviation

About one in six Chemistry 30 students writing the January diploma examination had mature status.

Adult students with regular school marks achieved the highest average in school-awarded marks.

Non-adults with no school marks, and non-adults and adults with regular school marks showed no significant difference in their examination marks.

The average of school-awarded marks and the average of examination marks for students with regular school marks showed very little difference between non-adults and adults.

Students with no regular instruction were generally not as successful as those students in the regular school subgroup.

Table 97
Physics 30
Maturity Status of Students Writing

Type	Number	Percentage
Non-adult	2477	84.7
Adult	448	15.3
Total	2925	100.0

Table 98
Physics 30
School Marks for Population Subgroups

Subgroup	Number of Students	Average (%)	Standard Deviation (%)
All Regular School	2870	69.4	13.1
Non-adult Regular School	2462	69.7	13.0
Adult Regular School	408	67.4	13.6
Non-adult School Mark Brought Forward	12	62.1	10.2
Adult School Mark Brought Forward	6	57.5	14.7

Table 99
Physics 30
Examination Marks for Population Subgroups

Subgroup	Number of Students	Total Score (%)		Written-Response Raw Score*		Multiple-Choice Raw Score†	
		Average	S.D.‡	Average	S.D.	Average	S.D.
All Regular School	2870	65.3	17.3	11.1	4.5	34.6	8.4
Non-adult Regular School	2462	65.8	17.3	11.3	4.5	34.8	8.4
Adult Regular School	408	61.9	17.2	9.8	4.4	33.5	8.4
Non-adult School Mark Brought Forward	12	55.8	12.3	8.0	3.7	31.0	6.6
Adult School Mark Brought Forward	6	45.7	11.1	5.5	3.6	26.5	4.6
Adult Challenging Examination	34	49.6	23.0	6.6	5.8	28.0	11.7
Non-adult No School Mark	3	42.0	16.5	6.7	6.4	23.0	5.3

*Maximum written-response raw score is 21 marks
†Maximum multiple-choice raw score is 49 marks
‡S.D. -- Standard Deviation

About one in seven Physics 30 students writing the January diploma examination had mature status.

Non-adult students with regular school marks achieved the highest average in both school-awarded marks and examination marks.

The average of school-awarded marks for students with regular school marks showed very little difference between non-adults and adults.

However, the average of examination marks for students with regular school marks was significantly higher for non-adults than for adults.

Students with no regular instruction were not as successful as those students in the regular school subgroup.

Table 100
Population Subgroup Summary
Mature Status and School Mark Average Differences

	% Mature	Difference From Regular Non-adult Average		
		Adult Regular School Mark	Non-adult School Mark Brought Forward	Adult School Mark Brought Forward
English 30	18.5	-2.8	- 5.9	- 1.8
English 33	12.6	2.4	- 4.5	- 7.6
Social Studies 30	9.4	-1.0	- 7.3	- 6.0
Mathematics 30	18.4	-2.1	-10.7	-12.1
Biology 30	15.8	2.3	-10.0	- 7.2
Chemistry 30	16.6	0.9	- 8.9	- 8.8
Physics 30	15.3	-2.3	- 7.6	-12.2

Table 101
Population Subgroup Summary
Examination Mark Average Differences

	Difference From Regular Non-adult Average				
	Adult Regular School Mark	School Mark Brought Forward		No School Mark	
		Non-adult	Adult	Non-adult	Adult
English 30	-3.2	- 8.0	- 9.4	- 4.1	- 9.1
English 33	-2.4	-12.6	-24.9	4.8	0.8
Social Studies 30	-2.1	-16.8	-16.6	- 5.0	- 2.7
Mathematics 30	-5.4	-13.0	-22.6	-14.0	-16.3
Biology 30	1.7	-13.9	-18.2	- 4.0	- 8.7
Chemistry 30	0.2	- 9.8	-21.8	- 9.6	0.3
Physics 30	-3.9	-10.0	-20.1	-16.2	-23.8

Tables 100 and 101 summarize the preceding tables in this section. The largest subgroup is used as the basis for comparison between groups. This subgroup, students without mature status and with current school marks, represents the typical school situation. The difference between the average for this subgroup and the average for each other subgroup is given in order to aid comparisons of the achievement of the subgroups.

Comparisons between courses should be made cautiously. The figures presented have been adjusted for variation in examination difficulty by using differences from the base group average. However, the examinations also differ in variability of scores (as measured by the standard deviation), and no adjustment has been made for this form of variation. The results are sufficiently precise for broad comparisons between subjects.

Social Studies 30 and English 33 have smaller proportions of students with mature status than the other subjects, which range between 15.3% and 18.5% in proportion of students with mature status.

Typically, subgroups other than the base group (Non-adult Regular School) have lower average achievement than the base group in both school-awarded marks and diploma examination marks. The only exceptions for school-awarded marks are students with mature status and current school-awarded marks in English 33, Biology 30, and Chemistry 30.

Subgroup differences in average examination marks show that students with school marks brought forward, both with and without mature status, receive markedly lower examination marks, on the average, than the base group. This result is likely due to the large number of students in these subgroups who are attempting to raise their examination marks from earlier sittings. Students whose original marks were satisfactory will not repeat the examination.

Adults with current school marks were above the base group average for examination marks in Biology 30 and Chemistry 30, just as they were for school-awarded marks.

Adults challenging the examination had lower average marks than the base group in all courses except English 33. In that course, their average was 4.8% higher.

Students without mature status and without school-awarded marks are relatively uncommon. It is likely of no particular importance that the 24 students in this group in Chemistry 30 and the 25 students in this group in English 33 had slightly higher average examination scores than the base group.

APPENDIX
STANDARDS FOR DIPLOMA EXAMINATIONS

Standards used for awarding A, B, C, and F grades for all diploma examination subjects are based on *final blended* marks. These standards have been determined and are explained in the *Junior-Senior High School Handbook 1988-89*, pages 17 and 18.

The ranges of the *final blended* marks for the four letter grades are as follows:

Grade	Final Blended Mark (%)
A	80-100
B	65-79
C	50-64
F	0-49

For each sitting, these standards are applied to the actual student *final blended* mark. The percentage distribution of the four letter grades is then computed. The results are reviewed and compared with the distribution of the letter grades obtained from students' marks from previous sittings.

During the marking of the diploma examinations, standard-setting procedures were carried out to establish standards for A, B, and C grades based on the *examination* marks.

The main purpose of standard setting was to establish that marks awarded in January 1989 were comparable to marks awarded for other sittings.

If the *final blended* marks appear to be unfairly low, then the standards may be adjusted. The results obtained from the standard-setting procedures are part of the information used for adjusting the *examination* marks for all students. This adjustment results in changes in the *final blended* marks.

The marks awarded in January 1989 were found to be comparable to the marks awarded for other sittings for all subjects. Therefore, no adjustments of marks were necessary.

DIPLOMA EXAMINATIONS PROGRAM
PROVINCIAL REPORT
QUESTIONNAIRE

The Student Evaluation and Records Branch strives to produce documents that will be useful to the educational community. The purpose of the following questionnaire is to garner your opinions about the *Provincial Report* so that these opinions can be considered when the content and format of the report are reviewed prior to January 1990.

Please take a moment to respond to the following questions. Then detach this sheet and send it to:

Mr. Michael Robinson
Assistant Director, Data Analysis and Student Records Services
Student Evaluation and Records Branch
Alberta Education
11160 Jasper Avenue
Edmonton, Alberta T5K 0L2

USE OF THE REPORT

1. My present role is primarily that of

   - teacher ☐ 1
   - school administrator ☐ 2
   - central office administrator ☐ 3
   - school board member ☐ 4
   - other (please specify)_____

2. Please check the box beside the statement that applies to you.

   I read the report, but I DID NOT use it to interpret the results attained by my students. ☐ 5

   I read the report, and I used it to interpret the results attained by the students in

   - my classroom ☐ 6
   - my school ☐ 7
   - my jurisdiction ☐ 8

3. Please respond to the following statement if you have checked boxes 6, 7, or 8 above.

   I have made use of the results to alter the educational program offered in

   - my classroom ☐ 9
   - my school ☐ 10
   - my jurisdiction ☐ 11

CONTENT OF THE REPORT

1. Please judge the usefulness of the information included in the various sections of the report by checking the appropriate boxes below.

	Very Useful	Adequate for Use	Of Some Use	Of No Use
Section 2: The Grade 12 Diploma Examinations Program	☐ 12	☐ 13	☐ 14	☐ 15
Section 3: Guidelines for Interpreting the Results of the Diploma Examinations	☐ 16	☐ 17	☐ 18	☐ 19
Section 4: Summary of Results	☐ 20	☐ 21	☐ 22	☐ 23
Sections 5 to 11: Specific Diploma Examination Results	☐ 24	☐ 25	☐ 26	☐ 27
Section 12: Results for Population Subgroups	☐ 28	☐ 29	☐ 30	☐ 31

2. If you wish, please comment further on the content of the report in the space below.

FORMAT OF THE REPORT

1. Please judge the usefulness of the report's format by checking the appropriate boxes below.

	Very Useful	Adequate for Use	Of Some Use	Of No Use
Organization into Separate Sections	☐ 32	☐ 33	☐ 34	☐ 35
Double-Column Presentation of Text	☐ 36	☐ 37	☐ 38	☐ 39
Presentation of Tables	☐ 40	☐ 41	☐ 42	☐ 43
Blending of Information through Text and Tables	☐ 44	☐ 45	☐ 46	☐ 47

2. If you wish, please comment further on the format of the report in the space below.